TRIPLER (C.S.)

MANUAL

OF

THE MEDICAL OFFICER

OF THE

ARMY OF THE UNITED STATES.

PART I.

RECRUITING AND THE INSPECTION OF RECRUITS.

BY

CHARLES S. TRIPLER, M. D.,

Surgeon, U. S. A.; Fellow of the College of Physicians and Surgeons of the University of the State of New York.

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ADJUTANT GENERAL'S OFFICE,

WASHINGTON, *August* 1, 1858.

This Manual is published by authority of the Department of War, as a guide to Recruiting and Medical Officers and Boards of Inspectors in the inspection of recruits.

The standards herein proposed will govern as nearly as possible both in the enlistment and rejection of recruits.

Disqualifications of rejected recruits will be described in the Certificates of Disability, as nearly as practicable, in the nomenclature and phraseology herein employed.

To aid in the inspection, the following rules will be observed:

1. Recruits will be washed before they are presented for inspection, that the concealment of defects may be thus prevented.

2. Each rendezvous is to be provided from the Recruiting Funds with a tape measure for measuring the chest, &c.

3. Blank forms to be used in inspecting recruits according to directions herein will be furnished from the Adjutant General's Office. They are to be filled up at the time of the first inspection for enlistment, and are to accompany the recruit as his personal description, and as a guide to the subsequent inspections.

BY ORDER OF THE SECRETARY OF WAR:

E. D. TOWNSEND,
Assistant Adjutant General.

PREFACE.

The following pages have been prepared as the first part of a projected MANUAL for the MEDICAL OFFICERS of the ARMY of the UNITED STATES. The urgent want of some standard and guide in the inspection of recruits has induced their publication in advance of the remainder of the work.

The Aide Memoire de l'Officier de Santé for the French Army has been taken as the basis of the work, and has been freely used in this part. It was the original intention of the Author simply to translate the French work for the use of his colleagues; but, upon a critical examination, it was found to contain so much that was redundant, and to be defective in so much that was essential for our own service, that this idea was abandoned, and it was determined to employ it as a basis only. At the same time, the arrangement of the French Manual appeared to be so judicious, it was considered best to adhere to that *generally*, which has been done. The works of others, however, as well as the experience and observation of the Author, have been drawn upon to make the work as useful as possible. Practical utility, rather than originality, has been the aim of the writer.

MANUAL

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CHAPTER I.

GENERAL CONSIDERATIONS UPON THE RECRUITING OF THE ARMY.

By the term "*Recruiting*" is meant the operation by which the men who compose an army are raised.

The military forces of the United States are made up of—1st, The Regular Army; 2d, Volunteer Corps; 3d, Drafts from the Militia of the States. The term "Recruit" is, however, usually limited to men enlisting into the Regular Army. Still, for our purposes, all men offering for the military service may be considered as included in the general term "Recruit."

The laws and customs of the several States differ as to the modes of raising militia and volunteers, and as to the grounds of exemption of men claiming to be disqualified for the military service by reason of physical infirmity. But when a State is called upon to furnish its contingent for the service of the United States, the medical inspection of the men presented does not differ from that practiced in the case of the recruit offering himself for enlistment into the Regular Army. Drafted men and volunteers must be accepted or rejected upon the same principles as regular recruits; therefore, the standard adopted in the one case will also govern in the others.

SECTION 1.

Recruiting by Voluntary Enlistment into the Regular Army.

"All free white male persons above the age of eighteen and under thirty-five years, being at least five feet four and one-half inches high, who are effective, able-bodied, sober, free from disease, and who have a competent knowledge of the English language, may be enlisted."*

It is not necessary that a person desiring to enlist voluntarily into the army of the United States should be a natural-born or a naturalized citizen thereof. The United States insists upon the right of the foreigner to seek an asylum upon her shores; and, except in such cases where such foreigner may have fled from justice, and from countries with which we have made extraditional treaties including the crime with which the refugee is charged, the emigrant is entitled to and will receive the protection of our flag. He may offer himself for enlistment into the army, and, should he be found to possess the requisite moral and physical qualifications, he will be received.

When enlisted he is to be taken before a civil magistrate or judge advocate,† and in his presence take the following oath or affirmation:

"I, A. B., do solemnly swear or affirm (as the case may be) that I will bear true allegiance to the United States of America, and that I will serve them honestly and faithfully against all their enemies or opposers whatsoever, and observe and obey all the orders of the President of the United States, and the orders of the officers appointed over me, according to the rules and articles for the government of the armies of the United States."‡

When this oath is taken the enlistment is complete, and the recruit becomes entitled to all the immunities of a soldier in the army of the United States, whatever may have been the country of his birth.

The only disqualifications, then, incident to the birthplace of the recruit, are crimes enumerated in treaties, and want of a competent knowledge of the English language. The former is a matter to be determined by the civil courts—the latter comes under the cognizance of the recruiting officer and the inspecting surgeon.

* Regulation Recruiting Service.

† Sec. 3, act June, 12, 1858, authorizes any commissioned officer of the army to administer this oath when there is no civil magistrate in the vicinity.

‡ Rules and Articles of War, sec. 10.

In the examination of a recruit the surgeon must rely upon the man himself for information as to several important points in his medical history, (as will be seen hereafter;) and unless the recruit has sufficient knowledge of the English language to comprehend and to answer the necessary questions distinctly, we are of opinion he should be rejected.

The recruit must not be less than eighteen nor more than thirty-five years of age.

This regulation does not extend to musicians, nor to soldiers who may re-enlist after having served faithfully a previous enlistment in the army. A person under twenty-one years of age cannot enlist without the consent of his parent, guardian, or master, if he have either.

But if the minor shall offer such written consent, the question then presents itself, whether so young a person possesses the vigor and physical development necessary for the performance of *all* the duties of a soldier.

The following remarks from the *Aide Memoire de l'Officier de Santè* upon this point deserve the most careful attention:

"When young men of this age are well made and have a true aptitude for the profession of arms, they are capable of making excellent soldiers. But it must not be lost sight of that there are few at this age fit for this profession. The body has not yet attained the necessary strength, the organs have not yet arrived at that stage of vigor which will permit them to pass rapidly, without a careful transition, from a state of repose to one of violent exercise; and it must be borne in mind that by the term "organs" we do not mean only those of locomotion, as the expressions *repose* and *exercise*, we have just employed, might suggest; but we intend also to include the viscera themselves. Thus, at this age, the gastro-intestinal mucous membrane is too readily over-excitable—the lungs are too susceptible of morbid impressions. This is the epoch of pulmonary congestions, of hæmoptysis, of those obstinate bronchites the frequent occurrence of which leads almost inevitably to phthisis. At this age likewise the nervous system is far from having arrived at its maximum of functional development; its play is still most irregular. How, then, under so many disadvantages, is it possible to encounter successfully the fatigues and accidents of war? How, with an irritable stomach, accommodate oneself to food the most diverse and frequently the most indigestible? How, with lungs so predisposed to disease, support such severe changes of temperature, heat, cold, moisture? How bivouac, how sleep in the mud, in the snow,

without shelter, without fire? How, with a nervous system still immature, at least in its functional relations, find in oneself sufficient moral energy to contend successfully against all those elements of destruction which surround the soldier in campaign?"

"If we were, then, called upon to give our opinion upon this point, it would be an unfavorable one; and if we did not go so far as to reject it entirely, we should restrain its exercise within the narrowest limits, and reserve it for very rare contingencies, to be determined by special rules."

We cannot but assent entirely to the physiological objections so forcibly urged against the enlistment of minors; and, considering the annoyances and losses to which the service is so constantly exposed from this class of recruits, the perjuries, falsehoods, and forgeries they induce in the young and dissolute, the inconsiderable accession of force they bring to the ranks, we think they might profitably be forbidden altogether. But so long as these enlistments are authorized by the Regulations of the army, the medical officer cannot summarily refuse to recognize them. He must confine himself to the investigation of the physical qualifications of the individual recruit.

Let him, then, institute a closer scrutiny into the condition of the *thoracic* and *abdominal viscera* of the recruit under age—learn if possible if he have any hereditary tendency to pulmonary or scrofulous disease—observe the degree of development of his muscular system, and be well satisfied that his osseous system is so well developed as to preclude all danger of distortion and the like from the severe fatigues the young soldier is sure to be called upon to encounter.

The *minimum height* of a recruit is fixed by the Recruiting Regulations of 1854 at five feet four and one-half inches.

The minimum stature for a soldier has been frequently changed in our service. Sometimes it has been fixed by law, sometimes by regulation. The act of April 30, 1790, fixed it at five feet six inches. The act of March 3, 1795, recognizes the same standard. The act of July 16, 1798, leaves both size and age to be determined by the President of the United States, or, in other words, makes these two qualifications the subject of regulations.

The object of prescribing the lowest limit of the stature of a recruit is to exclude such as, from diminutive size, are supposed to lack the physical strength necessary to endure the fatigues of a campaign. Our standard has varied from time to time, and according to the exigencies

of the service, from five feet six inches to five feet three inches. During the late war with Mexico the standard was reduced to five feet three, for the purpose of filling the ranks with greater rapidity. It is plain that a degree of physical strength is required for the soldier in active service at least *equal* to that necessary in time of peace. It seems strange, then, that with a view to strength a higher stature should be required in time of peace than in time of war. We have already stated that men of all countries may be and are enlisted into our service. We require of a foreigner only that he shall have been ten days in the country, and that he shall understand the English language. It becomes interesting, then, to inquire what is the average stature of the natives of the different countries that contribute to our rank and file.

From the records of the recruits received at Newport Barracks, Ky., (the western depot for recruits,) for the years 1853, 1854, and 1855, it appears that the mean height of—

	Feet.	Inches.
Americans enlisted was	5	8.06
Irish " "	5	6.92
Germans " "	5	5.15
Scotch " "	5	7.30
English " "	5	5.86
French " "	5	6.50

Marshall quotes in his Military Miscellany a table communicated by W. B. Brent, esq., showing the comparative height of the soldiers in the British and French armies in proportions of 1,000. From this table it appears that in the French army there are 583 in 1,000 from five feet one inch to five feet four inches. In the British army none under five feet five inches. The British minimum for the regular service is five feet five and one-half inches. In the Anglo-Indian army it is five feet six inches. The statistics of this army show the average height of the Bengal native infantry to be five feet eight and one-quarter inches, the Madras native infantry five feet six and one-quarter inches. The minimum in the French army is five feet one inch and *nearly* one-half; but, as we have seen, recruits of five feet one inch are received. The proportion of men of this stature in the French army is sixty-two in one thousand.

The experience of the late war in the Crimea has satisfactorily shown that the French soldier, though of less stature, is fully equal to

the English in capacity of endurance. In the war with Mexico our own men of five feet three inches were certainly as seldom inmates of the hospitals as those of greater stature.

What we want in a recruit is "*shape*, *activity*, *stamina*," and we feel sure that we more frequently meet with this combination in the man of five feet three than in the man of six feet three.

If physical strength were admitted to be in proportion to height within certain limits, we could still afford to take a recruit of less stature than the English; for the weight carried by the British soldier in marching order is not less than sixty pounds; whereas the weight of the equipment of the United States soldier, including ammunition and three days' rations, is but forty-two to forty-three pounds.

Vegetius remarks: "I know that great height was formerly very desirable in recruits. for none were admitted into the cavalry of the wings or the foot soldiers of the first legionary escorts but men of six feet, or at least five feet ten inches in height; but then we could choose from the large number of those who sought the career of arms, because civil employments had not yet attracted to themselves the choice of the youth of the States. But now, since we cannot do otherwise, we must have less regard to height than to vigor. Whoever is charged with the recruiting of troops should endeavor, above all things, to judge from the eyes, from the whole expression of the countenance, from the conformation of the limbs, of those who are capable of making the best soldiers. There are as certain and as well-understood indications for judging of the soldierly qualities of men, as there are for ascertaining the value of a horse or a hunting dog. The young soldier should have lively eyes, the head erect, the chest large, the shoulders square, a strong hand, long arms, the belly lank, a free, easy way, the legs and feet less bulky than muscular. When we find all these in a man we may dispense with height, for it is much more necessary that the soldier should be robust than tall."*

The Aide Memoire remarks upon this passage that it was written at a time when physical force was not counterbalanced by science and tactics. But now the system of war authorizes us to be less vigorous, and permits us to receive into the ranks men who, in the time of Vegetius, would have been excluded: "In the present time, when the fate of battle is often decided by fire-arms, to which the hand of a man of six feet does not give more power than the hand of one of five, it is not

* Aide Memoire.

easy to see the reason of the rule which so generally influences the choice of those who select subjects for the formation of armies. * * * * It is evident to the common sense of every one that a body of men of unusual size presents an object of proportionably great volume to the marksman; and as it is generally known that such a body moves with little comparative celerity, it necessarily suffers a comparatively great destruction from missile force before it can reach the point of attack. But besides the positive disadvantage of greater volume, and, from probable slow movement, comparatively long exposure to destruction from fire-arms, before the superiority of bodily power, if any such exist, can be brought to bear, it is well known to those who have seen and estimated the effect of severe campaigns, that men of large size are ordinarily the first to fail under fatigue; and medical men know, from observation, that they commonly suffer from disease in greater proportion than others. These are facts that cannot be disputed; and if they be admitted to be true, it will not be attempted to maintain that bulky men are the best subjects for ordinary military service."*

Since the introduction of the Minié rifle the positive disadvantage of bulk is still more apparent, and can no longer be prudently neglected. Quickness of perception, enterprise, and intelligence certainly do not depend upon bulk of body, but are found comparatively much more frequently in men of small than in men of large stature. The bulky man, from a consciousness of physical force, due as much to weight as to nerve, may ordinarily possess more *physical* courage; but the quick-witted, active little fellow, who instinctively makes up, by intelligence and address, for the difference in physical force, thus training and disciplining his mind, however unconsciously, to meet and grapple with superior strength, will make the best and most reliable soldier.

We think, then, the good of the service would be promoted by reducing the minimum standard height to five feet three inches, provided that shape, stamina, and activity are secured; it would give a greater range for selection, and we are persuaded that this stature will generally be found to unite sufficient physical strength with the other qualities indispensable in the soldier.

The *recruit* must also be effective, able-bodied, and free from disease.

"In passing a recruit the medical officer is to examine him stripped, to see that he has the free use of his limbs; that his chest is ample; that his hearing, vision, and speech are perfect; that he has no tumors or

* Jackson's Formation, &c., of Armies.

ulcerated or extensively cicatrized legs; no rupture or chronic cutaneous affection; that he has not received any contusion or wound of the head that may impair his faculties; that he is not a drunkard; is not subject to convulsions; and has no infectious or other disorder that may unfit him for military service."*

The spirit as well as the letter of a regulation will always be carried out by the zealous officer. It is obvious to the professional man that there are many causes of disqualification not enumerated in the regulation above cited. That medical officer who should confine his examination to the defects recited in the text, would but very imperfectly perform his duty. The intention of the regulation is to exclude from the rolls all who are in any way, physically or mentally, incapable of performing the duties of a soldier; and the surgeon is required to certify that no such disqualification exists when he passes the man.

The circumstances of the military service in the United States are so totally dissimilar to those in any other among civilized nations, that the suggestions and cautions deduced from their experience are but to a limited extent applicable to us. The motives to deceit with us are such as may enable the recruit to get into the ranks; whereas, in other nations, they are such as may aid him in escaping the conscription in one service or the life-thraldom of another. In the army of the United States the term of service is but five years—the pay of the soldier is fully adequate to his wants or expectations. The man does not lose caste by enlisting; and, under the beneficent legislation of Congress, if he possess, or have the ambition and industry to acquire, such elementary knowledge as will fit him for the discharge of the duties of a commission, he is eligible to and may receive one. It is, therefore, a matter of the first importance that the medical officer should carefully scrutinize the physical and intellectual qualifications of the recruit. The ineffective man weakens the ranks he was intended to strengthen. He serves but to fill the hospitals, incumber the trains upon a march, consume supplies, and call for the services of the effective and able-bodied to minister to his infirmities when his own services are wanted in the field. Let the surgeon, then, bear in mind that it is the number of *bayonets in the field*, and not the number of *names upon the rolls*, that determines the strength of an army, and he will be less anxious to pass numbers of recruits than that those whom he shall have certified to be free

*Reg. Med. Department, p. 32.

from defects shall not compromise his professional reputation by their failure in the hour of trial.

It is not any easy thing for the inexperienced surgeon to examine a recruit properly. Unless he pursue some systematized method, important points will be apt to escape him. The British regulations prescribe the particular routine according to which the examination is to be conducted. Our own regulations give no such instructions, but leave the method of examining the recruit to the discretion of each individual medical officer.

We shall first endeavor to point out the most important defects which demand the rejection of a recruit, and then to sketch a method of conducting the examination, by which, if followed out, these blemishes can scarcely escape detection.

We must, however, admit that in some instances the most careful and experienced observer will be deceived. The arts of the dissembler *may* cover up important defects for a time. He has every advantage, and he will unscrupulously avail himself of his knowledge. We meet with so many cases in which the baldest falsehoods are so pertinaciously asseverated in order to carry out a premeditated imposition, that, harsh as it may appear, we must caution the surgeon and recruiting officer against relying at all upon the declarations of a recruit, when any other means of arriving at what we wish to ascertain can be commanded.

When a knave succeeds in his scheme, his defect will probably discover itself very soon, and then we have the means of discharging him before he shall have gained much by his frauds.

"*All lank, slight, puny men, with contracted figures, whose development is, as it were, arrested, should be set aside.*"*

It is evident such men cannot bear the fatigues of war. It is to effectiveness in war that we are always to look, for "war is the normal state of the soldier; peace is for him the temporary and exceptional condition." Ever since the addition of Texas, New Mexico, and California to the territory of the United States, our soldiers have been constantly engaged in war of some sort. The privation and exposure necessarily incident to the occupation of new and uncultivated countries, and the harrassing wars constantly carried on with the savage tribes that infest them, demand a higher standard of physical strength in the soldier than would be required in any war we could be engaged

* Aide Memoire

in with a civilized enemy. The diminutive, half-developed recruit is totally unfit for the service our soldiers have to perform.

Intemperate habits are a positive disqualification in a recruit.

Although ardent spirits have for many years been excluded from the regular ration of the soldier, and although sutlers are prohibited from keeping it in their stores, still, even in places the most remote from the settled parts of the country, the whisky-dealer hangs upon the flanks and rear of the camp ever ready to minister to the depraved appetite of the drunkard. The intemperate soldier is never to be relied on; first in a mutiny and last in battle, he is at once an example of insubordination and a nuisance to his comrades.

It is difficult oftentimes to detect the habitual drunkard. We must rely, to some extent, upon the man himself for information upon this point. Men frequently present themselves who exhibit evident signs of a recent debauch. It is frequently impossible to say whether this is the habit of their lives, or merely a temporary lapse, induced, perhaps, by misfortune, disappointment, or youthful folly. To reject summarily in such a case would frequently lose to the service a good and efficient soldier. It is positively enjoined by the regulations that every man shall be sober when enlisted. In cases, then, where there is room for doubt, a suspension of a final decision should be resorted to for a sufficient length of time to enable the man to recover from the effects of a mere temporary debauch.

But when the man has long indulged in habits of intemperance, it is almost sure to be indicated by persistent redness of the eyes, offensive breath, tremulousness of the hands, attenuation of the muscles, particularly of the lower extremities, sluggishness of the intellect, and frequently an eruption of rum blossoms on the face and purple blotches upon the legs. Men presenting such signs of intemperance as these should be rejected.

In addition to the personal observation of the recruiting officer and surgeon as to these indications of intemperate habits, the recruit should always be made to say distinctly whether he is a drunkard or not; and his answer should be recorded on the spot, (in the manner to be hereafter indicated,) for purposes of accurate reference, should a drunkard succeed in imposing himself upon the service notwithstanding the careful observance of all the requisite precautions upon the part of both the recruiting and medical officers.

The man should have also the free use of all his limbs.

There are many causes preventing a free use of the limbs, but, fortunately, their effects may be readily recognized by the recruiting officer, even without the assistance of a surgeon. The most frequent of these causes are fractures, dislocations, anchylosis, paralysis, permanent contraction of the flexor muscles, chronic rheumatism, enlarged bursæ, varicose veins, cicatrices of burns, ulcers or wounds, toes crowded, overlapping, redundant, or defective, ingrowing toe-nails, corns, bunions, splay foot, &c. We merely mention these things here, reserving a more extended examination of them for another place.

When a recruit is inspected he should be made to execute such motions as will serve to point out any immobility of any of his joints. For this purpose various modes have been suggested.

"Many of the causes which impede the performance of the animal functions are visible to the eye, and may be estimated to the full extent *a priori;* others only discover themselves upon trial in great exertions. As it is only from uniformity of power under exertion that union of action can be assured, and as this is the point which essentially contributes to success in war, a standard for the measure of the powers of exertion among recruits is not less necessary in sound reasoning for the construction of a military instrument than a standard for the measure of the height of the stature. In order to ascertain this important point, the writer conceives it to be proper that every person who enters into the army should be brought to trial in walking, running, leaping, climbing hills, and traversing irregular and broken grounds. It may be fairly admitted that a full-grown person who is not capable of marching at the rate of four miles in the hour, with fire-lock and knapsack, is not eligible for a soldier destined for field service. If his wind fail in walking briskly up hill, or if his joints be weak, so that he does not move with speed and safety over broken grounds, it would be unwise to enroll him on the lists of an active army."*

If it were practicable to institute this mode of examination into the integrity of the organs of locomotion, there can be no question its results might be implicitly relied upon. The improved methods of modern tactics, and the introduction of the severe drill of the chasseur à pied into our service, requiring a greater degree and more uniformity of physical power and activity, would seem to demand some such ordeal. By similar means the integrity of the functions of the heart and lungs would also be ascertained, and many other advantages might be pointed

* Jackson op. citat.

out. But inasmuch as in cities and towns where most of our recruits are enlisted we have not the means of instituting so severe a test, we must content ourselves with a less perfect mode. The method prescribed in the Regulations of the British Army seeming to be as well adapted to the end in view as any we know of, we here transcribe them:

"Upon entering the inspection room the recruit is to walk a few times pretty smartly across the apartment, for the purpose of showing that he has the perfect use of his lower extremities. He is then to be halted and set up in the position of a soldier under arms, with the knees about an inch apart, and examined both in front and rear from head to foot. Should no material defect be discovered during this survey, the examination may go on. The recruit is then to perform, in imitation of the hospital sergeant, the following evolutions: To extend the arms at right angles with the trunk of the body, then to touch the shoulders with the fingers; next to place the backs of the hands together above the head; in this position let him cough, while at the same time the examiner's hand is applied to the rings of the external oblique muscles. Let the inspecting officer examine the spermatic chord and testes; then pass his hands over the bones of the legs. The recruit is next to be made to stand upon one foot and move the ankle joint of each extremity alternately; when any doubt is entertained respecting the efficiency of this joint, or any part of an inferior extremity, he should be made to test his strength by hopping upon the suspended limb for a short period, and the size and aspect of the corresponding joint or part of the opposite limb should be accurately compared. He is next to kneel on one knee, then on the other, and subsequently upon both knees. Let him then stoop forward and place his hands on the ground, and while in this position it ought to be ascertained whether he is afflicted with hæmorrhoids.

"He is then to extend the superior extremities forward, for the purpose of having his arms and hands examined, and with this intention he is to perform flexion and extension of the fingers, and to rotate the forearm."

The systematic observance of this method of examination will enable the recruiting officer or surgeon to detect any impediment to the free use of the limbs and joints of the recruit, as well as to discover some other defects that may demand his rejection.

To enable the inspecting officers to carry out the plan more readily, they should carefully instruct the recruiting sergeant in the regular

mode of performing the various motions required, and the recruit should be directed by the sergeant to imitate him in all the motions. The recruiting officer or surgeon will then be at liberty to observe the motions of the recruit both front and rear while the inspection is progressing.

To this list of motions to be executed should be added the vertical and lateral motions of the lower jaw and head, and extreme flexion of the wrist, hip, knee, and ankle joints.

We may here observe that we have seen a few instances in which the recruit could not touch his shoulders with his fingers, and still the most rigid examination could detect no imperfection in any of the joints of that extremity. When any difficulty in touching the shoulders with the fingers is perceived, a more cautious inspection of all the joints of the limb must be instituted, as the probabilities are that some defect exists. The elbow or wrist will *generally* be found to be the failing joint.

We may again remark, that the order in which the several motions are executed is immaterial, *provided* they are all gone through with. Our own method is this: After the recruit has gone through with the walking and hopping, and has taken the position of a soldier, while questioning him as to any defect, injury, or disease he may have suffered, we percuss the chest, place the hand over the heart to ascertain the character of its motion, etc. We then feel the surface of the head carefully; then examine the ears, eyes, teeth, nose, throat, and motions of the jaws in succession; then extend the arms above the head, with the backs of the hands together, and in this position examine the *rings*, chord, and testes; then cause the man to touch his shoulders with his fingers. We next inspect the elbow and wrist-joints, fingers, etc., being careful to require the fore-finger to be flexed and extended separately, while the other fingers are kept flexed and the thumbs are adducted across the palms of the hands; then ascertain the presence of the vaccine or variolous cicatrix; then cause the man to touch the floor in front of him with his fingers while the nates are kept elevated, so that the existence of *hæmorrhoids, fistula in ano, or perineo*, etc., can be observed. Then the man rises and we examine the urinary organs; next the independent motions of the ankle joints; then cause the man to kneel upon each knee separately; and, finally, to raise on his toes.

It is evident that while these motions are being performed, the experienced eye has abundant opportunity for observing every point of the

man's person front and rear, and will scarcely fail to perceive any deviation from the normal standard in the head, limbs, thorax, abdomen, spine, pelvis, etc.

The chest should be ample.

The limit of what may be considered an ample chest has never been definitely determined. The "*vital capacity*" of the chest, as Mr. Hutchinson terms it, will depend upon the integrity of the contained viscera.

This author thinks that the vital capacity is commensurate with the range of mobility or thoracic movement, and that the mobility increases in arithmetical proportion with the height. Our own observations have led us to the conclusion that the mobility is rather inversely as the circumference of the chest, than directly as the height of the person—as if increased mobility were designed to make up for less capacity as indicated by a less diameter; so that the quantity of air consumed does not differ greatly in different men with healthy lungs, whatever may be their relative stature or circumference of chest. And this, after all, we look upon as the essential condition of healthy respiration. The larger quantity of air that may be forcibly expelled, as shown by the spirometer, we consider as indicative of muscular vigor, rather than of the quantity of oxygen required or regularly used for vital purposes.

The vital capacity, as measured by Hutchinson with his spirometer, gives some curious results. Mr. Hutchinson thinks the circumference and length of the chest have little influence in determining the quantity of air taken in at each inspiration, because the circumference increases with the weight, and the length of the chest varies but little in men of different statures. To the latter proposition we accede, to the former we do not. Mr. Hutchinson measures with a tape around the chest *above* the nipples. We think this may account for the different results of his measurements and ours. Mr. H. finds the mobility of the chest to average three inches, seldom reaching four. Now, by passing a tape around the chest *above* the nipples, when the arms are extended above the head, (as they ought to be,) the margins of both the latissimus dorsi and pectoralis major muscles will be included as well as the fatty developments of the breasts themselves. This will give an increased measurement to the parietes of the chest, and when a forced inspiration and expiration are made, the swelling and relaxation of these muscles will give an apparent mobility greater than the real. We measure the circumference of the chest by passing the tape around it immediately at the point where the border of the latissimus dorsi springs from the

trunk. The tape will then be found to fall *generally below* the nipple. In this way we find the mobility of the chest is usually two and one-half inches, and seldom exceeds three; once only have we found it four. In this way, it seems to us, we may approximate more nearly to the solid contents of the thorax. We think the geometric solid represented by the thorax to be nearer a paraboloid of revolution than any other figure; and if we consider the space occupied by the heart and the mediastinal spaces to be equal to that part of the cavity contained by the plane of the diaphragm and a horizontal plane passing through the lowest point of the attachment of the diaphragm to the sternum, we shall have a regular figure whose solid contents are easily calculated.

The spirometer of Hutchinson is not readily accessible to the army surgeon, and would be found both inconvenient and unnecessary in the examination of recruits. The tape measure will answer all practical purposes.

Stokes found twenty chests that he measured to average thirty-five inches, and a maximum chest to measure forty-three inches and one-half. Taking thirty-five inches for a circumference, with a mobility of three inches, and the altitude of the figure we have described at seven inches, it will be found that fifty-nine cubic inches have been expelled at one expiration. This we consider to be near the truth. In regular breathing the quantity taken in at each inspiration is much less. Thus, Dumas and Coathupe, when they inspired sixteen times a minute, found they consumed at each inspiration twenty cubic inches, or 266.66 cubic feet in twenty-four hours. From more recent experiments by Dr. Draper, the quantity consumed at each inspiration with the same number of inspirations per minute, was found to be thirty-nine cubic inches. The circumferences of the chests of 150 recruits examined by us within a few weeks have varied from 29.5 inches to 38 inches, and their mobility from two to three inches. The mean circumference was 33.97 inches. The height of the men ranged from five feet four and one-half inches to five feet eleven and a half. The least circumference was in the tallest man, and the greatest in a man five feet eight and a quarter inches. Other men of five feet four and one-half and five feet four and three-quarter inches have measured 34 and 34.5 inches. The man measuring 29.5 was rejected for evident feebleness of constitution. We should then fix the lowest limit of thoracic circumference, measured as we have indicated, at thirty-one inches, with a mobility of two inches in a man of five feet six inches. A less "vital capacity," in our own opin-

ion, disqualifies the recruit. We have dwelt more upon this point because it is one of great importance. A better judgment can be formed of the physical strength of a recruit from the development of the thorax than from any other single feature. Cruvelhier has well remarked that, "in each individual, the capacity of the thorax is exactly proportioned to the volume of the lungs; and as in general voluminous lungs co-exist with a highly developed muscular apparatus, it follows that the size of the thorax is no equivocal sign of a vigorous constitution."

We have remarked that the figure of the thorax is nearly a paraboloid. This is of course not rigidly true—no section of it is a regular circle, but it will be found to be flattened in different directions in different places. For our purposes, the most important normal flattening is *antero-posteriorly*. Many variations, however, of the normal configuration, are met with; some compatible with health, others pathological. We will only mention in this place that—

When the *lateral* exceeds the *antero-posterior* flattening, and the sternum is prominent, the chances are that the subject is phthisical and should be rejected.

When there is much *curvature* of the *spine*, so that the ribs are abnormally approximated on one side, the mobility of the chest will be sensibly affected and the vital capacity seriously diminished. Such men are neither physically nor physiologically fit for soldiers.

The remaining points of examination being less general in their character, will be treated of when we come to speak of the different organs and systems which may be the seats of special diseases of such a nature as to disqualify a man for the military service.

We shall conclude this chapter with a few general remarks selected from various authors:

"Reason dictates that none should be admitted to the military service but men endowed with a healthy and vigorous constitution. But the expression "*Strong constitution*," when applied to a man remarkable only for great muscular development or predominance of the lymphatic system, is sometimes deceptive. In fact, it frequently happens that this athlete, with a herculean form, presents organic affections which render him unfit for the military service, and which an attentive examination alone can discover. We advise, therefore, that this class of men should be subjected to a more minute inspection. The employment of the stethoscope may then be a valuable assistance when one is expert in the use of this instrument. This observation is particularly appli-

cable to very tall men, in whom the thorax is rarely in proportion to the other parts of the body."

"In general, men of small stature and otherwise well formed resist the fatigues of war better and are more active than those of tall stature; and it was thus judicious that the last law upon the recruiting of the army reduced the standard of height for the military service."

There is still another constitutional condition which, far from being characteristic of perfect health, on the other hand, indicates that the subject presenting it is in a condition approaching disease, and is consequently unfit for the army. This is an excessive predominance of the sanguineous system, or a constitution plethoric to an extreme degree, in an individual of full habit, whose figure is short, thick-set, with a large head, short neck, countenance injected, veins prominent, and who can neither stoop down, wear a stock, hook his collar, nor wear a shako without his face becoming purple, and being threatened with an attack of apoplexy."*

"All weight under eleven stone and a half (161 lbs.) does not interfere with the vital capacity; but, on the contrary, it increases with the weight up to this point. But above this weight, so far as our table goes, (viz: fourteen stone,) the weight interferes with the vital capacity in the relation of rather more than one cubic inch to the pound."†

"Besides height, beauty and symmetry of figure influence opinion and determine preferences in the choice of soldiers. * * * * The graceful shape and form of perfect symmetry are seldom connected with power, activity, and that inexplicable fund of endurance which supports toils and fatigues with constancy and firmness. On the contrary, it is usually observed that cross-made persons—persons whose joints are large and prominent—possess great powers of action and long endurance of toil. The observation is true, and the reason of its truth is obvious. The form of body alluded to furnishes an advantageous lever for the action of muscles; and on this ground bodies so constructed are patient of toil, inasmuch as their movements are effected with comparatively little effort. Hence, instead of grace and symmetry of form, a rosy color and delicate texture of skin, large joints, prominent bones, swelling muscles, rough and elastic integuments, are true military properties. *They* are the real beauties of a soldier, as they are the surest marks of the capacity of enduring the fatigues of war. * * * * * *

* Aide Memoire. † Hutchinson.

The duty imposed upon the surgeon is not to select what is in every way good, but to *reject* what is absolutely unfit.*

"It may be observed generally, that in the case of dwarfs or undersized men, the *upper* part of the body is often sufficiently well developed, and it is in the *lower* limbs, or *inferior half* of the body, that the deficiency exists. In remarkably *tall* or overgrown men, on the other hand, we have the lower limbs for the most part unduly developed, and the trunk, particularly the *chest*, often defective."†

These general remarks are sufficient to indicate to the recruiting officer, as well as to the inexperienced medical officer, the points to which his attention should be specially directed in the inspection of recruits, and of which any intelligent officer is capable of judging.

* Jackson's Econ. of Armeès. † Sir George Ballingall.

CHAPTER II.

SPECIAL AFFECTIONS OF PARTICULAR ORGANS THAT DISQUALIFY A RECRUIT, OR ARE JUST CAUSES FOR THE DISCHARGE OF AN ENLISTED MAN.

SECTION I.

The subject of this section is so ably and so fully treated in the Aide Memoire, that we shall do little more than translate the introductory remarks as they stand. Some alteration in their phraseology will be necessary to adapt them to our service. This we shall do freely, and add, whenever it may appear useful, our own observations and those of other writers upon particular points. In this way we hope to be able to include all that may be necessary to enable the inspecting surgeon, whether military or civil, to form a correct judgment in the several cases of the *admission* of *recruits*, of the *discharge* of *soldiers* for *disability*, of the *admission* or *rejection* of *substitutes for drafted men*, and of the *exemption of drafted men* from service on account of *physical* or *mental infirmities*.

PRELIMINARY CONSIDERATIONS.

"The appreciation of the different circumstances which give the right to exemption or discharge from the military service is left to the conscience, the judgment, and the experience of the medical officers. There neither is nor can be any fixed or invariable rule upon this subject. The jurisprudence of the matter is very simple, and reduces itself to rejecting all persons who present vices of conformation, or other infirmities offering any real impediment to the exigencies of the different branches of the service.

"From this it may be readily perceived how difficult it would be to include in any one catalogue *all* cases of incapacity. Two official documents, emanating from the Minister of War, have been published at different times to regulate the proceedings of councils of revision; but it has been conceded that the table prepared by order of the Minister of War, and the old instructions of the inspectors general of the army medical service, are incomplete, and should no longer be consulted except as mere hints.

"It must also be borne in mind that these tables were drawn up at a time of excessive severity upon the subject of exemptions; at the time when the conscription was carrying off the whole of the French youth. But now, when we take but a part of the classes, (says the Minister,) councils of revision (surgeons and boards of inspection in our service) should reject from the army all those conscripts (volunteers or substitutes with us) who do not appear evidently capable of becoming good soldiers and of supporting all the fatigues of war."

"Every decision of a council of revision which would admit into the contingent men evidently unfit to perform good service, would be a violation of its orders, and an inexplicable forgetfulness of the important duty confided to it."

These injunctions are of the greatest importance, and cannot be too strongly commended to the consideration of medical and mustering officers charged with inspection of volunteers and militia who may offer for the service of the United States.

When volunteers are called for, the commissions of the officers are not uncommonly made to depend upon their success in raising a certain number of men within a given time. Political aspirations too frequently induce the ambitious citizen to seek notoriety in the field. Entirely ignorant of the profession of arms, and with ideas of the nature of war derived from the annual militia muster of his vicinity alone, he receives eagerly anything that offers to fill his contingent; and thus, with mere apologies for men, heedlessly seeks the unequal strife with disease and death that too certainly awaits him in the field. A principal cause of the mortality that has so frequently and fearfully decimated our volunteers, is the original unfitness of so many of their rank and file for the military service. Were the important duty of the preliminary medical inspection fearlessly and carefully conducted, this prolific cause of disease and death would be effectually removed. It appears to us to be doubly dishonest to receive an incapable volunteer—first to the service, in burdening it with a man who has no chance of ever being able to draw a trigger, and whose military history is sure to be found in the pension office instead of the field reports; and, next, to the man himself, in permitting him, from perhaps an impulse of patriotism, to proceed to the seat of war, there to be a burden to his comrades, and too often to finish a sad career by succumbing ingloriously in bed.

"I have had occasion to remark," again says the Minister in his in-

structions upon the call of 1833, "according to the reports made to me by the inspectors general, that many of the young men comprised in the contingent have been sent back from their corps, a short time after their incorporation, on account of infirmities contracted before their entry into service." "Councils of revision. I hope, will bear in mind how important it is to the interests of the treasury and of the army to put an end to a state of things that can no longer escape the investigation of the Chambers. They cannnot carry too much care and caution to the selection of young soldiers. In this respect, they should recollect that the law says: all those whose infirmities render them unfit for service shall be exempted. Now, it would be but wretched to so interpret this law as to violate its letter and to disregard its spirit; to send into the ranks men who only involve the State in useless expense, whose existence is dragged along from hospital to hospital, where they finish by perishing, if they are not immediately restored to their families. To point out such grave results to the councils of revision is, I hope, to put an end to them."

These remarks are to the full as applicable to our volunteer system as to the French conscription. No officer of experience can fail to see their force.

What, then, are the infirmities which unfit men for the military service?

The term of enlistment of the regular soldier in the army of the United States is for five years only. Volunteers are called for different terms, varying, according to circumstances, from a few months to a year, or for the duration of an existing war. Militia or drafted men usually for three months.

It might appear at first sight that a less rigid rule of exclusion might be observed in our service, on account of the short term of enrollment, than would be demanded in services where the enlistment is for a much longer period, and sometimes for life. But this view will not be sustained by the result of its practical application. The only safe rule is to insist upon a sufficient integrity of all the organs to enable a man to endure the greatest hardships for a severe campaign; and if the recruit is capable of this, he is as fit to be enlisted for life as for three months.

But, as has been before remarked, there is no fixed rule upon the subject. "The appreciation of the facts is left to the sagacity of the surgeon. The confidence reposed by the government in his honesty and

in his judgment, imposes upon him responsibilities so much the more stringent."

Diseases or infirmities which render a man unfit for military service may be *real*, *simulated* or *dissimulated*, (concealed,) *provoked* or *feigned*.

The surgeon cannot be too much upon his guard against the sources of error by which he is surrounded. He must be suspicious, incredulous, and, above all, most attentive.

In treating in detail of each of these diseases or infirmities, we shall endeavor to furnish the means for detecting fraud.

All those diseases or infirmities which impede the functions of one or more organs or members, all incurable diseases, or such as are curable only after a long time, when their seat is in an important organ, demand exemption, rejection, or discharge from the military service. *Any chronic disease* should reject a recruit for our army, (if seated in an important organ,) but a less rigorous rule should be applied in cases of discharge. A chronic hepatitis, or engorgement of the liver, for example, though of so light a grade as to admit of the performance of the ordinary duties of a soldier, will be availed of by the indolent recruit to enable him to evade duty and spend half his time upon the sick report, while it would scarcely be allowed to interfere at all with the duties of the veteran soldier. We would not pass a recruit with such a disease, nor would we grant a certificate for the discharge of a soldier for that reason.

"We shall not occupy ourselves any further than we have already done with defect of height, as it does not constitute a *disease*, although it is a reason for exclusion from the service."

"We shall examine, in their medico-legal relations, those *infirmities*, *deformities*, and *diseases* which present the characters pointed out above; and in this examination we shall follow the order of *regions*, as is done in the inspection of recruits. In fact, this examination being made by regions, and successively from head to foot, we shall adopt the following order, which appears the most convenient and the most appropriate to the nature of this work:

1st. THE HEAD.
2d. THE NECK.
3d. THE CHEST.
4th. THE ABDOMEN.
5th. THE GENITAL AND URINARY ORGANS.
6th. THE SPINAL COLUMN.
7th. THE SUPERIOR EXTREMITIES.
8th. THE INFERIOR EXTREMITIES.

These are the points upon which questions of rejection or discharge usually turn. But there are still others, which, although more rare, are often met with. Such as *diseases of the cerebro-spinal nervous system;* diseases whose diagnosis should be well understood, because they are frequently simulated; SCROFULOUS DISEASES, or a deterioration of the constitution by *scurvy*, by a *cancerous diathesis*, or by inveterate constitutional VENEREAL disease; *chronic and extensive cutaneous* diseases; a *puny constitution*, or arrest of development. In this category is included a number of men, sometimes lymphatic to excess, flabby, spongy, wan; sometimes diminutive, spare, weak, narrow-chested, limbs without muscles; sometimes with a skin dry, dull, or shriveled, with prominent articulations and flaccid flesh; sometimes badly built, badly proportioned; finally, sometimes emaciated, worn out by long fatigues, or by antecedent disease. Such men should be excluded from the ranks of an army. "The surgeon charged with the inspection of young men for the military service should keep himself constantly on his guard; should maintain a perpetual distrust, as we have already said. One would risk nothing by inclining rather to the theory of *simulation* than *reality*. But while he should be circumspect, he should also be equitable, and neither omit nor neglect anything in order to base his decision upon just and substantial grounds."

"It is allowable, and sometimes necessary, to subject to experiment men whom we can compass in no other way; but these experiments should never present any danger, nor expose the subject of them to any untoward consequences. All violent measures should be rejected as illegal, cruel, and dangerous. They are at once inefficient and deceptive, and can only furnish contradictory results.

"The axiom that 'no man should be operated upon against his consent,' is too generally admitted to require that it should be maintained by an argument.

"The law has not established, nor can it establish, any distinction between irremediable diseases and those that can be cured only by means of a surgical operation. It limits itself to conceding that every man affected with infirmities that disqualify for the career of arms, shall be exempted after professional men have been consulted. The law, then, requires that we take the man fit for service, and not him who must be subjected to an operation to fit him for the performance of his duties. It would be contrary to every principle of humanity and justice to require of an unfortunate man, whose infirmities are a sufficient reason

for his discharge, that he should undergo a bloody operation in order to retain or admit him into the military service. And, moreover, every intelligent surgeon knows that there is no surgical operation, however trifling it may be, that may not be followed by accidents capable of compromising life."*

"In the inspection of men called out by law, the surgeon, military or civil, occupies the position of an *expert*, who, knowing the nature of the service demanded, pronounces, after examination, upon the fitness, moral or physical, of the man before him to satisfy that demand. In cases of doubt, the opinion should always be in favor of the man as to whom it arises. This is the only way to reconcile all interests. There are a great many men who, too feeble to render good service, cause the State large hospital expenditures, and succumb miserably under the colors in time of profound peace. Yet, left at their own firesides, these men might have continued their occupations, and perhaps have completed a long and laborious career. By sending such men into the field we exact from them more than the law has required; for we subject them to the manifest danger of death, while the law was never intended to exact from them the sacrifice of more than a portion of their lifetime. Furthermore, how many debilitated men return to their homes exhausted—invalids, incapable of providing for their subsistence—a burden to themselves and others, who, had they been left at home, might have been useful citizens. The robust man, on the contrary, will become still more robust in the field; the army will possess in him a soldier equally fit for work or battle. *He* will return capable of embracing or pursuing a laborious career, and of providing for himself and for his family. Thus will be solved the problem so important to the country—how to secure its defense in the best posssible way with the sacrifice of the least number of its citizens."†

These remarks have a peculiar significance in relation to the acceptance of volunteers into the service of the United States, while their application to the case of *drafted militia* will be at once perceived.

But while persons who are the true subjects of military disabilities should be rejected or discharged from the service, a different course should be taken with that class of men who, in order to evade a duty they are unwilling to perform, or to escape from an obligation they find more irksome than they anticipated, *feign* themselves the subjects of disqualifying disease.

* Aide Memoire. † Bégin.

"Among feigned diseases, some are expressed and announced to the surgeon by occult symptoms, of the nature of which he cannot judge by any external sign," (affections of the kidney, for example;) "others present outwardly evident signs, which have been provoked by artifice, with the culpable design of creating a belief in their reality," (e. g., ulcers, &c.) "It is a studied, combined, premeditated imposture, in which, either alone or aided by the advice of others, the man represents, with more or less fidelity and exactness, the disease with which he wishes to pass as being affected, with the view of evading duty, escaping punishment, exciting commiseration, &c. Substitutes for conscripts *dissemble* these infirmities in order to be received, while these last *simulate* them to escape service. And we are obliged to confess there are professional men who, from weakness, obsequiousness, or avarice, and forgetful of their obligations and their honor, do not hesitate to lend themselves to, and even to teach, these culpable manœuvres. But the evil is done; the simulation of diseases has been reduced to principles—an *art* has been made of it. It is, then, to the interest of families and of consequence to the State to frustrate such designs; and, in order to do so, it is necessary to employ stratagem against stratagem."*

We should, then, examine the suspected disease with so much the more circumspection and severity, in that the subject may have the greater interest as to whether his disease should *be* real, or should be *considered* to be real. The surgeon should ask himself whether the disease *can* be *imitated* or *excited*. In interrogating the subject, he should make his questions the more subtle in proportion as the mental faculties of the suspected malingerers may be the more developed. In this way he may be made to fall into contradictions, and to confess that he has symptoms incompatible with his disease.

The GENERAL RULES for detecting *feigned diseases*, as suggested in Guy's Medical Jurisprudence, that may be profitably introduced here, are:

"Inquire in all cases into the existence of motives for deception."

"Inquire into the previous history of the patient, and the character which he bears among those who know him best, as his comrades or companions."

"In cases of feigned diseases, properly so called, consisting of assemblages of several symptoms, we must examine minutely into the

* Percey and Laureat.

history and alleged causes of the disease. Compare the age, temperament, and mode of life of the suspected person with the symptoms present. Watch narrowly the course of the symptoms, and contrast it with the known march of the disease itself."

"The suspected person should be visited at all hours of the day, and at times at which he does not expect to be seen. He should also be watched by those he is not likely to suspect."

"No questions should be put of a nature to instruct the patient as to what we wish to know; but our inquiries should be so directed as to lead him into incongruous statements. He should be thrown on his own invention, and allowed to talk in his own way. The suspicions we entertain should be carefully concealed. We must ourselves become dissemblers, and meet the malingerer with his own weapons."

Bègin says: "The means proper for defeating fraud in the matter of infirmities or lesions of organs, reduce themselves to the following:

"1. Consideration of the moral situation of the subject, and of the motives that may induce him to *simulate*, to *conceal*, to impute to another, or to have excited himself, the disease with which he pretends to be affected.

"Comparison of the disease with the age, sex, temperament, and mode of life of the individual.

"3. Attentive examination of the diseased parts, the local symptoms they present, the impediments to the performance of functions which result from their lesions, or which is attributed to them.

"4. Careful comparison of these lesions with the development, the tint, and other general dispositions of the organism.

"5. Study of the causes to which the real or pretended lesion is attributed.

"6. Methodical interrogation of the subject as to the circumstances that accompanied the development of the disease, the sensations, the pain, the impossibility of action it determines.

"7. Suitable employment of the therapeutic means in relation to the indications furnished by the morbid condition and observation of their effects.

"8. Moral excitements calculated to distract the attention while the parts are being examined or set in motion."

MALINGERING, or "SCHEMING," as it is usually called, with a view to obtain a discharge from the service, is not of very frequent occurrence in the Army of the United States. The culpable facility, if not complicity,

of petty civil magistrates, affords the discontented and unscrupulous a much more speedy and less painful means of violating their contract with their country. But for the purpose of evading disagreeable duty, or affording opportunity for vicious indulgence, it is by no means unfrequent. Sir George Ballingall remarks: "There are to be found, both in the military and naval branches of the service, some worthless characters, who, instead of showing a commendable zeal in the discharge of their duty, are incessant in their attempts to impose upon the surgeon. And whenever they succeed in exempting themselves from duty, they throw an additional burden on the willing and meritorious soldier, while at the same time every successful case of imposition becomes a focus whence other similar attempts emanate. This subject, therefore, possesses, in a national point of view, a much deeper interest than might at first be supposed, as it regards the efficiency of men for the public service, the protection of the real and innocent sufferer from suspicion, and the exemption of the good soldier from an undue proportion of duty."

Much tact is required in judging of these cases. Still, "this tact does not depend upon severity; for the most efficient surgeon will often doubt without expressing his suspicions, and seem to be the dupe of a schemer that he may become his master."*

The young medical officer should be cautioned that this species of malingering is much more frequent where men are subjected to the caprices of an indiscreet or ill-tempered commander. Such will always exist while human nature remains as it is. We have ourselves known a commander much more ingenious in devising tortures for the suspected than encouragement for the meritorious. Where such is the case, men will always do duty reluctantly, and evade it if they can. When malingering, then, is frequent, the medical officer should observe carefully whether oppressive or arbitrary discipline may not have prompted the fault; and if so, he should (but always within the strict limits of his own province) interpose for the protection of the men. Such a course on his part is demanded alike by humanity and fidelity to the service. It is "a duty enjoined by an authority higher than any temporary authority to whom its performance may happen to be disagreeable."†

* Marshall. †Cyclopædia of Practical Medicine.

Section II.

Special investigation of the several organs that may become the seat of disqualifying disease, real, feigned, or concealed.

In the preceding section we have remarked how difficult it would be to prepare a complete catalogue of all the circumstances which constitute physical incapacity for military service. In the investigation we are about to make into the several diseases or infirmities that disqualify a man for the profession of arms, we shall endeavor to omit nothing important. We shall dwell more particularly upon the most common cases, or those which, from their importance, demand a more detailed examination. In other cases, we shall limit ourselves to a simple mention.

1. Affections of the Head.

Alopecia, or the total or almost total loss of the hair, preventing a man from wearing the cap of a soldier and exposing him to the accidents resulting from exposure to the intense heat of the sun, or to the influence of other atmospheric vicissitudes, constitutes a case for rejection or discharge. *Alopecia* may be simulated by the action of depilatories, or it may be but transient—the effect of a recent and severe acute disease. It is, then, of course, no reason for either rejection, exemption, or discharge.

Where it is *old* and *real*, it is characterized by a whitish, dull, and uniform tint of the hairy dermis—the bluish points corresponding to the hairy bulbs can no longer be distinguished.

When the disease really exists, a substitute, in order to impose himself upon the service, may attempt to conceal the defect by a wig. This would of course be detected in the manipulations always practiced upon the head of the recruit at the time of inspection.

Alopecia so complete as to constitute a reason for the rejection of a recruit, will seldom present itself. A mere bald spot upon the crown of the head is of no consequence. Total loss of the hair is never seen, except as a sign of cachectic disease. When *this* exists, rejection is imperative.

Tinea Capitis.—The porrigo lupinosa of the English: the teigne faveuse and the teigne furfuracée of the French.

These affections frequently result in alopecia. They are undoubt-

edly contagious, and being moreover unsightly and offensive, they demand the rejection of the recruit presenting them. Fortunately, they are very rare in adults. Where baldness is the result of this form of disease, it has characters that cannot be mistaken. Bald people, who have had tinea in childhood, usually remain pallid and puny. They are of spare habit, with a cachectic complexion. We may add that, in a man eighteen or twenty years of age, tinea is seldom curable, unless it is quite superficial, and characterized by but a small number of pustules. When the skin is deeply altered by numerous pustules, furnishing an abundance of purulent, fetid sanies; when the lymphatic glands are swollen; when the alopecia is complete, or nearly so; when, in fine, there exists all the symptoms of a severe chronic disease, the *discharge* of the soldier should be recommended.

Tinea, when it exists, is almost always an affection contracted in childhood; it rarely breaks out after the age required for a recruit. We should, then, almost always find the characteristic signs of an inveterate form of the disease. Thus, "the skin of the head will be swollen and painful, with the obstinate heat and itching that accompany the almost constant tumefaction of the neighboring lymphatic glands; pustules and excoriations of the hairy scalp, from which oozes a viscid, reddish, or yellowish humor, very fetid, the desiccation of which forms upon the head crusts more or less thick, and under which an infectious sanies lodges that corrodes the skin and destroys the roots of the hair and the surrounding parts."*

Some attempts have been made to simulate tinea by dropping a few drops of nitric acid upon the head in order to destroy the hair. But it is scarcely possible to be imposed upon in this way; for, in true tinea, the head exhales the characteristic nauseating odor, the hair is thin, and the countenance exhibits the peculiar cachectic appearance.

Imperfect ossification of the *bones* of the *cranium*, recognizable by the persistence of the *fontanelles*, and sometimes *separation* and *mobility* of the *sutures*.

Monstrosity in size of the *head*, and *considerable deformities*, the consequence of *fractures*.

Serious lesions of the *skull*, the consequence of complicated wounds, considerable fractures, and the operation of trephining; ulcerations with caries, followed by exfoliations, which have involved the *entire* thickness of the bones.

Fungous tumors of the dura mater.

* Coche.

When fractures of the skull have occurred requiring the removal of bone, according to the experience of the writer, if extensive within reasonable bounds, they are less liable to prove fatal, or to be followed by epilepsy, than if of very *limited* extent; but serious lesions of the mental faculties almost always result. Any exertion is apt to produce a degree of temporary insanity, and the subject is entirely unfit for the military service. Such a man should never be enlisted under any circumstances; and if the injury occur to a soldier, he should be discharged.

If there be depression of a mere spicula of bone, epilepsy is a more common consequence. Such a recruit should be rejected; but a soldier, the subject of such an accident, should not be discharged until convulsions have actually occurred.

A wound of the scalp, denuding the skull and even causing exfoliation of a small portion of the outer table of the skull, is no reason for rejection or discharge. The caries of the entire thickness of the bones of the cranium that demands rejection or discharge, is the result of severe injuries, or of inveterate constitutional disease, and cannot be mistaken. These several lesions of the cranium will be apt to escape detection, unless the surgeon is careful to examine the head minutely, as well as to inquire particularly whether the man has, at any time, received any injury to the head whatever. If even a mere wound of the scalp is acknowledged, the cicatrix should be carefully handled and felt.

Affections of the Auditory Apparatus.

Loss or defect of the external ear, or malformations that interfere with the hearing.

Obliterated or imperforate auditory canal.

Tumors of any description that are incurable, except by an operation, and that obstruct the free perception of sounds.

Chronic otitis or otorrhœa.

Loss of the external ear, or a portion of it, may have been occasioned by sentence of a criminal court, by injuries received in private brawls, or by wounds received in battle.

In the first cases, though the hearing may not be sensibly affected, still the disreputable character they indicate in the man should cause his exclusion from the ranks. In the last case, it is neither a reason for rejection nor discharge.

Imperforate or obliterated auditory canal constitutes an absolute cause for rejection or discharge.

The tumors above noted are also absolute causes for rejection, but not for discharge, unless the loss of hearing is very decided. If these tumors are seen at all in enlisted men, it will probably be in those who have served more than one enlistment. These men will, in most cases, prefer an operation for the relief of the disability to being discharged. The alternative should be submitted to their choice.

Otitis, or inflammation of the mucous membrane of the ear, is not a sufficient reason for exemption or discharge, unless it is chronic, and attended by a sensible diminution of the faculty of hearing. But it *is* a reason for the rejection of a recruit or a substitute; for it may go on to suppuration, and if in the internal ear, the matter may be discharged through a perforation in the tympanum by the eustachian tube, or by a fistulous opening in the mastoid process. The two last modes, according to Itard, are rare; nevertheless, we have seen one such case.

Structural changes are another consequence—such as tumefaction, or entire or partial obliteration of the auditory canal, vegetations, or excrescences upon the tympanum or mucous lining of the canal, pustular eruptions or excoriations of the canal, and sometimes injury or destruction of the bony or cartilaginous portions of the ear.

Otorrhœa is another result of chronic otitis. This affection is generally dependent upon a scrofulous constitution, and is sometimes accompanied by caries of the bones. It is termed *mucous* or *catarrhal*, and *purulent*, according to the nature of the discharge. The latter indicates caries of the bone, while the former occurs in scrofulous habits, and its suppression is apt to be followed by engorgement of the lymphatic glands of the neck, tumefaction of the testicles, affections of the eyes, porriginous eruptions on the scalp, (Itard,) paralysis of the nerves of the same side of the face, (Bell,) rheumatism and catarrh of the bladder, (Lallemand.) When either of these signs is perceived, attention should be directed to the ear; and if they are not of themselves considered cause for rejection, should they appear to depend even remotely upon scrofulous otitis, rejection is demanded.

Purulent otorrhœa being generally dependent upon caries of the bones of the ear, the cochlea, semi-circular canals, or mastoid cells, always impairs the hearing. It is a consequence of otitis, scrofula, or syphilis. Rejection or discharge in this case is absolute. Copland remarks that "all chronic discharges from the ear, however slight

they may seem, should be viewed in a serious light, not merely as they generally lead to deafness, but as they are also liable to be followed by fatal cerebral disorganization."

Otorrhœa is sometimes *feigned*. For this purpose some have introduced honey into the canal; others have employed the juices of herbs, the greenish hue of which they thought calculated to deceive an inspector; others again have used cheese mashed and diluted, for the purpose of giving the discharge the requisite fœtor. Sometimes an attempt is first made to induce ulceration and inflammation of the canal by the introduction of epispastics, and then to counterfeit the discharge by a mixture of rancid fat, empyreumatic oil, asafœtida, etc. Wherever otorrhœa is assigned as a reason for exemption or discharge from the service, it is necessary to examine carefully the nature of the fluid contained in the auditory canal, to inspect the tympanum, to ascertain accurately the condition of the mucous lining of the canal and the other parts of the ear. The fœtor of pus is readily distinguished by the experienced surgeon from that of any other substance likely to be employed. Should doubt still remain, the microscope will determine it. It is, moreover, rare that otorrhœa should exist for any length of time without being combined with certain organic changes, whose presence or absence will relieve any uncertainty that the local exploration may leave on the mind.

When otorrhœa has been induced with a view of procuring a discharge, removing the means of keeping it up will generally be sufficient to repress it. This may be certainly effected by placing the man under the surveillance of the chief of his squad, or by keeping him closely in the hospital for a few days.

Deafness constitutes an absolute cause of rejection, exemption, and discharge.

Deafness cannot be concealed, and, therefore, there is no risk of a recruit or substitute being received with this infirmity.

But it is frequently FEIGNED, because it is so easily simulated, and it is so difficult of detection. Individuals have been known to play the part of a deaf man with so much presence of mind, perseverance, and skill, as to lead one inevitably into error. Still, most of these knaves soon fall a prey to proofs or surprises that may be readily prepared for them.

"It is well known how numerous are the causes of deafness. Some are visible and palpable, others are profoundly hidden and equally inaccessible to our instruments and our senses."

Deafness may depend upon obstruction of the auditory canal. Hence, the simulation of this cause by the introduction of foreign bodies which resemble in some degree the caruncles or vegetations that are sometimes developed in the mucous lining of this canal.

When deafness is kept up by the presence of a foreign body, as a pea or bean, or by the hardening or accumulation of the wax, it is recognized by means of the speculum, and readily yields to the extraction of the foreign body that intercepted the sonorous wave. We may always detect these impostors if, not confining ourselves to a superficial examination, we have the perseverance to set snares for them day and night, into which they cannot help stumbling, unless, as in very rare instances, they have a presence of mind that never deserts them.*

Bégin suggests the following means of detection: "The first consists in questions addressed to the pretended deaf man. We should always distrust a man who perceives absolutely *no* sound, however loud one speaks to him. When one succeeds in making oneself heard, the conversation should be continued in the same tone, feigning implicit confidence; then, while exciting and keeping up strongly the attention of the subject, the voice should be gradually lowered to the ordinary tone. This method, adroitly employed, very often succeeds. When it fails, other means may be employed, such as waking the man up suddenly in the middle of the night, accusing him of some great crime; following him up in his intercourse with his comrades; letting fall behind him, when he believes himself unobserved, some pieces of money, etc. The skill of the observer must wrestle with the cunning of the knave, and it is seldom the truth will remain undiscovered."

A number of ingenious devices have been employed by medical officers to detect this imposture. To recount them here is unnecessary and inexpedient; for there are few professional men whose minds will not suggest something of the sort, while the publication of such, in a work to which the impostor may find access, would be to furnish him with the means of defeating them. "When persons are really deaf, the expression of the countenance generally furnishes important indications. They have a very peculiar physiognomy, in attempting to imitate which the impostor makes only grimaces.

Perforation of the Tympanum.—Where this exists it is a sufficient reason for rejection, because it exposes the subject to frequent attacks of violent otitis. But when it is made a question of discharge, the liability

* Aide Memoire.

to these attacks of otitis should be verified by observations before the discharge is granted.

It may be recognized by the aid of a stylet or delicate probe diverging into the cavity of the tympanum, or by causing the subject to close the mouth and nostrils accurately, and then to make a strong expiratory effort; the air will pass out through the auditory canal. This is a precaution that should always be taken in the examination of a *substitute*.

Affections of the Face.

Great deformities of the face—large, livid, hairy, unsightly spots—loss of substance of the cheeks—are so many reasons for rejection. Some of these lesions may in nowise hinder the functions of the several organs; but as they are calculated to excite aversion and disgust in others, they may prove prejudicial to the service by provoking discontent in the barrack room and by exposing the sufferer to cruel and irritating sarcasms and jests, that too often end in fatal quarrels

Affections of the Eye and its Appendages.

Chronic ophthalmia and its *consequences*, such as falling out of the eyelashes, chronic discharge from the lids, films upon or ulcerations of the cornea, staphyloma, etc.

"Ophthalmia does not constitute a case of exemption from military service except it is chronic. It moreover does not demand exemption, except when it has already produced in the apparatus of vision disorders permanently obstructing their functions.

"In the most simple cases, when this phlegmasia presents itself without the complication of a general morbid condition, such as scrofula, the disease is susceptible of cure by systematic treatment. When it depends upon the occupation of the individuals affected, it is almost always cured under the influence of a different mode of life. Nevertheless, it must not be lost sight of that, in most cases, ophthalmia readily relapses under the influence of the lightest cause; that young soldiers affected with it are cured with difficulty, because, upon leaving the military hospital where this sort of disease is very common, they are exposed to the whole series of causes that tend to reproduce it."

"Chronic ophthalmia, with destruction of the eyelashes, which leaves the eye without defense against the action of a too brilliant light, or of bodies floating in the atmosphere—that which is complicated with

eversion or *inversion* of the lids, *opaque spots, or perforation of the cornea, staphyloma, puriform palpebral flux*—presents so many cases that demand exemption, rejection, or discharge from service."*

These observations are manifestly judicious and prudent, but in their application to our service they require some modification. Notwithstanding the amenability of a recent ophthalmia to treatment as a *general rule*, still it is frequently so troublesome, even where the patient is honestly desirous of being cured—it is so easily reproduced and kept up when the man wishes to avoid duty; and it will, in so large a proportion of cases, occupy so much of the short term of enlistment in its treatment—we think no recruit should be approved who is thus affected. It will be better to let the man go and get cured, and then he may present himself again for examination. Should there be the slightest suspicion or probability that the ophthalmia is the result of gonorrhœal inoculation, the rejection should be absolute.

In cases of *purulent ophthalmia*, rejection is *absolute*, however recent or apparently mild the attack; for there is sufficient probability, to say the least, that the disease is contagious, to make it highly improper to introduce a case of it into a barrack.

It is impossible to FEIGN *films, palpebral inflammations*, or *ulcers;* but it frequently happens that these lesions are *provoked* by the application of irritating substances to the eyes. These applications, if kept up for any length of time, may occasion any shade of chronic ophthalmia; while plucking out the lashes, followed by cauterization of the bulbs, may produce ulceration of the free borders of the lids. When gonorrhœal matter is used for an irritant, the consequences may be frightful, and the self-inflicted punishment for the fraud severe. It would be impossible to distinguish in this case between the crime and the misfortune of the sufferer. But in other cases it will be found that the provoked disease is generally confined to the *right* eye; that when the ophthalmia appears to be epidemic, the *officers* are not affected; that it does not induce so much disorganization as the true disease; that the wrinkles in the lids, the relaxation of the lids, and the *crowsfeet* of chronic ophthalmia, produced by the constant winking, always a feature of the true disease, are wanting. On the contrary, the surface of the lids is more or less red, smooth, hot, and swollen. These signs are a sufficient indication that the disease is recent and acute.

But if the subject is of a lymphatic or scrofulous habit, the lids tume-

* Aide Memoire.

fied as the consequence of an habitual inflammatory condition, their borders swollen, follicles ulcerated and furnishing an abundant secretion, *these* signs exclude all idea of fraud.

A *film* upon the right eye may be *simulated* by the application of a weak solution of nitrate of silver to the cornea. We say the *right* eye, because it would be inconvenient for the malingerer to make the application to the *left;* and if even a genuine opacity should supervene in that eye, it would be no reason for a discharge. It would not be worth his while to trifle with that eye if he could.

When this cauterization is practiced, it produces a superficial whitish spot, confined to the external lamina of the cornea, irregular in outline, almost always large from the beginning, and which disappears in a short time without leaving any traces of the lesion. In such a case the fraud may be detected, in the first place, by the characters already indicated; and, secondly, by the absence of all those traces that inflammation sufficiently intense and protracted to produce such alteration of the cornea seldom fails to leave in the whole appearance of the eye.

When fraud is suspected, the subject should be deprived of the means of keeping it up; and the longer the time that shall have elapsed from the last cauterization, the more easy it will be to perceive that but a small scar exists, with a serrated margin that shrinks up and detaches itself, running through upon a small scale the different stages that are seen upon a larger scale when caustics are applied for the destruction of tissue. By the aid of a tolerably good lens all these changes are readily seen.

Sir George Ballingall quotes a statement to this effect: Three hundred men being at one time affected with ophthalmia, accommodation for twenty-four men, the number quartered in one ward, was quickly prepared. The men in this ward were then aroused at midnight by the surgeon and commanding officer, and marched in a state of nudity to their new beds. The old ward was secured for the night, and upon carefully searching the beds the next day, a number of small parcels of corrosive sublimate were found concealed. The consequence was the rapid cure of two hundred and fifty of the cases of inveterate ophthalmia.

In the British service handcuffs and thin masks have been resorted to in suspected individual cases to prevent the possibility of any application being made to the eye by the malingerer.

Paralysis of the *upper eyelid* calls for rejection and also for discharge

when it is *real* and interferes sensibly with vision. It should, however, be of the *right eye* to justify discharge.

Bègin suggests the following means of detecting a FEIGNED PTOSIS: "Falling of the upper eyelid may be feigned, but then there is no œdematous engorgement of the organ. If the subject is examined from above, it is perceived that the feigned diseased lid remains dropped only as an effect of contraction of the orbicularis muscle. If the attention of the impostor is diverted by causing him to look briskly at some elevated object, the *veiled* eye is *unveiled*. Finally, paralysis of the levator muscle is generally accompanied by that of the other muscles supplied by the third pair of nerves, so that the eye is at the same time directed outwards and diverges from its normal rectitude."

Adhesion of *one* or *both lids* to the *globe* of the *eye* demands rejection or discharge.

Spasmodic motions of the *lids* interfering with *vision*.

This is a case that very rarely occurs, and is still more rarely a permanent affection. A case is, however, recorded in the Aide Memoire which resisted all modes of treatment. Even during sleep there was a convulsive twitching of the lids. The iris was so much contracted as to render the pupil scarcely perceptible. Such a case evidently calls for rejection or discharge. Should an attempt be made to simulate it, there could be no difficulty in detecting the fraud.

Affections of the *iris*.—The pupil may be permanently *contracted*, as in the case above mentioned, or from antecedent inflammation and adhesion of the iris to the capsule of the lens. This is a case for rejection if existing in either eye. Discharge is demanded only when the right eye is the seat of the disease. It of course cannot be simulated. Contraction of the pupil from the effect of opium, alcohol, &c., being, from the nature of the cause, transient only, as well as always accompanied by well-marked constitutional signs, can scarcely be confounded with the organic contraction.

The *iris* may be *defective*, either congenitally or as the result of accident. The effect in this case will probably be a disturbance of the vision of that eye. The extent of this disturbance, as well as the *eye*, whether the *right* or *left* that is affected, must govern as to the approval or rejection of the recruit. We have recently reinspected a recruit who had lost a portion of the iris in the upper and outer part of the right eye. This man's vision was good and his judgment correct as to the objects placed before that eye, but he saw them of about one-half their linear

dimensions. We did not think it a case calling for rejection under the circumstances, though we should not have passed the man had we examined him originally. We have seen another case in which, from a blow from a stone, the lower border of the iris has been detached from its insertion, and it is now stretched as a chord across the pupil. The pupil is consequently but half a circle, while light is also admitted through the cornea below the detached border of the iris. In this case vision is not sensibly affected. The effect of the injury, then, as determined by experiment, must govern in each individual case.

Iritis.—This disease always affects vision, and, when it exists, is an objection to enlistment.

When the iris differs in color in the two eyes, or in one eye, it should be particularly examined into, lest iritis should be the cause of this difference. It does not call for the discharge of an enlisted man, unless it shall have resisted treatment for a length of time.

Large encysted tumors in the substance of the *eyelids.*

Hydrophthalmia and *exophthalmia.*

Cataract.

Fistula lachrymalis, or *tumefaction* of the *lachrymal sac.*

Loss of an *eye* or of the *use* of an *eye.*

Blindness, or *total* loss of *sight*, whether congenital or accidental.

These are all reasons for rejection.

"It is sometimes very difficult to verify the fact of blindness. When called upon to examine a case of feigned blindness, we should seem to have no doubt of the existence of the infirmity. Then, while examining the eye, seize a cataract knife and suddenly direct it at the eye. The impostor will step back at once, and the cheat is discovered."*

Amaurosis or gutta serena does not constitute a case for exemption or discharge from service by the French law, except when the *right* eye is the seat of the disease; but with us the practice is different. With amaurosis of either eye the recruit or substitute would not be received. The disease is always apt to extend to the sound eye whatever may have been its cause; and though, when depending upon local irritation, such as worms in the intestines, caries of the teeth, excessive venery, &c., it may be susceptible of cure, still we cannot rely upon the statement of the individual for the true history of the affection. Nor do we know of any means by which the temporary attack can be distinguished from the permanent affection.

* Aide Memoire.

When a discharge is solicited for this cause, the case is different, and we should not grant the certificate except the right eye be the seat of the disease.

Amaurosis is sometimes FEIGNED, with a view of procuring a discharge. The impostor asserts that he is blind of one eye—usually the right—and dilatation of the pupil is effected by the application of belladonna, or some similar substance, to the affected organ. Total blindness or impaired vision of both eyes may also be feigned or even simulated by the internal use of the same substance. Detection in these cases is sometimes troublesome, but not very difficult or uncertain. "When an amaurotic individual enters your room, he walks in with a peculiar and undecided manner. He does not direct his eyes toward you, but stares with a vacant gaze. Very generally his eyelids are widely opened, but this is not constantly the case. The globes themselves are more or less prominent. We almost always observe that the pupil is dilated, and that it contracts very slowly, if at all, under a strong light. On the other hand, we see it very small sometimes, yet equally inactive. The form also of the pupil may vary in many ways. Thus it is often very irregular, oblong or oval, and it is sometimes directed upwards and inwards. Its color also is often changed, so that we do not see the beautiful black color; but, instead of it, we look upon a dull, heavy, or clouded pupil, or a bright green one."*

"In most cases the iris has no longer any mobility. Its circle is very much dilated, and sometimes almost effaced. The brightest light excites no change in it. In some cases, however, it preserves its contractility, and that happens when the branches it receives from the third and fifth pairs do not partake of the lesion of those forming the retina. But this contractility is scarcely similar to that of a sound eye. In this the contraction excited by transition from darkness to light is prompt and durable. It alternates with dilatation as the light is approximated to or withdrawn from the eye, and the diameter of the circle of the iris is never reduced to a mere linear trace. In the amaurotic eye, on the contrary, when this contractility exists, it is sluggish and not permanent, however bright the light may be, even that of the sun."†

When one eye only is affected, particularly if it be the right, the surgeon should be upon his guard. If contractility still exists in the affected eye, when really diseased, a comparison of the motions of the two irides will show the fact. In the diseased eye the motion will be

* Mackmurdo. † Dictionary of Medical Sciences.

sluggish; in the sound eye, prompt. In the affected eye the dilated state is soon resumed, though the light is still presented to it. In the sound eye the contraction remains as long as the light is kept up. When there is no amaurosis, both pupils contract and dilate equally and simultaneously under the same circumstances, unless some dilating substance has been employed. In this case the means of detection are that, in true amaurosis, the conjunctiva will have a natural appearance; in the *feigned* this tissue will appear irritated, congested, and tearful. But as the effect of these dilating agents is but temporary, it is plain that, by preventing the impostor from having access to them, (which is very easily done,) the cheat cannot be kept up long.

The effects of belladonna will continue from four to seventy-two hours, and of hyoscyamus even longer, according to the time during which the application may have been kept up. Bègin ascertained that when belladonna had been applied for several consecutive days, contraction of the pupil was not observed until after seventy-two hours privation of the use of the drug.

Myopia is an objection to a recruit.

This is a very common affection, and one often assigned as a reason for exemption from military service. It is also very easily simulated. It may result from the habitual use of spectacles, the power of which has been gradually increased. Simulated in the beginning, it becomes real in the end.

An individual is considered short-sighted if he reads at a distance of a foot with concave glasses, Nos. 3 and 4, and if he distinguishes distant objects with No. 5½, and especially if he presents the characteristic signs of the myopic, such as wrinkles at the angles of the eyes, prominence of the eyes, and contraction of the pupils.

If the eye is somewhat salient—if the cornea is convex—if the man when he is addressed winks in looking at one—if, when he is desired to read rather small print, he brings it briskly within a constant distance—if he walks with his head rather inclined forward, (a very common thing, however, with very tall men)—if he was born of myopic parents—the presumptions are strong in favor of myopia. To verify it, give the man plane glasses, telling him they are concave, and that if he cannot read with them he is not short-sighted. Or, the better to deceive him, the glasses may be made slightly convex. Afterwards we should pass to concave glasses, recollecting always that the eye can easily accommodate itself to different foci, and can read with No. 2, 3, or 4, which

are very strong myopic glasses; but, in general, a true myope can read quite small print at a distance of eighteen or twenty inches; while a man who has acquired short-sightedness by practice can only read very near. Finally, take away the glasses, and require the man to read very small type at two and one-half inches from the eye.

In spite, however, of all these precautions, a very cunning man, thanks to his drill, may embarrass the surgeon a good deal. It is, then, for the surgeon to redouble his vigilance; to examine the man repeatedly, and at times when he least expects it.*

Chrystalline lens—Loss of, by operation for *cataract*.

We consider this an objection to a recruit, for it invariably affects the power of the eye to accommodate itself readily to vision at different distances. If it be the right eye, the objection is absolute.

In persons who have undergone this operation, the anterior chamber of the eye will be found larger than natural, and the iris will present a concave surface anteriorly, due to the loss of the support of the lens and its appendages. And if the eye is inspected somewhat obliquely or crosswise, the aqueous humor will be found to have a tremulous motion.

Presbyopia.—This is rarely seen among recruits, and, unless very decided, can be no objection to their fitness for service. As a reason for discharge, it can be but one of the accidents of that period of life which, of itself, requires that the soldier should rest from his labors.

Nyctalopia—night blindness.—The recruit seldom presents himself with this disease, nor can its existence be ascertained in any other way than by the confession of the man himself, as the inspection of recruits is habitually conducted by daylight. A man acknowledging the affection would of course be rejected.

It is *ordinarily* no reason for discharge, but it *may* sometimes be a sign of incipient amaurosis. It is not an infrequent affection in the field, particularly in southern climates; and for that reason, as well as the difficulty of verifying it, it is a favorite cheat with the malingerer.

True nyctalopia is generally attended with more or less sluggishness of the motions of the pupil, and, after some days, with undue sensibility to light in the daytime. It is sometimes a concomitant of scurvy, and very commonly dependent upon defective nutrition, or some disorder of the digestive apparatus. It is very generally relieved by treatment in temperate climates in one or, at most, in two months; but in hot

* Aide Memoire.

climates it lasts from four to nine months, and may even go on to total blindness. It must also be noted that in northern regions, during the prevalence of snow, it may also occur.

Nyctalopia is not a valid reason for discharge, until a change of climate, as well as a suitable course of treatment, shall have been tried unsuccessfully. When there is probable cause for suspicion that it is feigned to evade duty, doubling the sentinels—i. e., placing the suspected malingerer on post with a healthy sentinel—may be resorted to.

Hemeralopia, or *day blindness*, is seldom seen, and we believe is never feigned. Should an attempt of the sort be made, its detection would be a very simple matter.

Pterygium, if extending far over the cornea, may sensibly impede vision; and, in that case, would demand rejection.

Encanthis, sometimes is of a malignant character, and demands rejection or discharge.

Strabismus, if seriously affecting the normal direction of the *right eye*, is generally admitted to be an insuperable objection to a recruit. But if either eye be affected, it should be carefully examined, for it will be sometimes found that the divergent eye is amaurotic. Macmurdo says he had two patients, a father and son, who had squinted slightly from childhood, though the strabismus was not congenital. In both instances it was discovered accidentally, during manhood, that the squinting eye was almost blind.

Dr. Carron du Villards communicated to the author of the Aide Memoire the following facts and remarks upon this subject:

"Every man who squints much with the right eye is unfit for the infantry service. A foot soldier who cannot direct his musket accurately is an imperfect soldier. This imperfection is so much the greater in that he is often required to fire obliquely, and in the direction opposite to that of his infirmity; for, if in a direct fire, by closing the left eye, he can bring his right eye to a central direction for a few moments only; he can carry it no farther outward except with great difficulty."

"If from the foot soldier we pass to the horseman, we find that decided strabismus, either inward or outward, of the right eye, produces the same inconveniences. When strongly convergent squinting of the left eye exists, the soldier is obliged to use the right eye to replace his sabre in the scabbard. To do this he sways strongly to the left, and not only loses his alignment, but if his horse is at all sensible to his leg,

(*sensible sur les aides,*) he swerves briskly to the right, and crowds his neighbor on that side."

"As to the artilleryman, decided strabismus of the right eye presents the same inconvenience as in the infantry soldier, since it is with this eye that he directs his piece. The engineer with the same defect finds his work executed with the scale or graphometer continually interrupted by the necessity he is under of changing eye or place to record his observations."

The conclusion, then, from these observations, is that strabismus of either eye disqualifies for the cavalry service. Strabismus of the right eye *disqualifies for all arms.*

Affections of the Olfactory Apparatus.

Deformities of the nose disfiguring the face, sensibly altering the voice, and impeding respiration;

Loss of the whole or a part of the nose;

Purulent and fetid discharge from the nose, whether due to old and incurable ulceration, or to any other lesion of the nasal mucous membrane;

Ozæna—fœtid breath;

Chronic swelling of the septum narium, obliterating the nasal fossæ;

Polypus of the nose, incurable without an operation—are so many reasons for rejection or discharge.

"Obstruction of the respiration, dependent upon congenital or accidental deformity of the nose, when this disposition has been verified—chronic ulceration of the nasal mucous membrane, and polypus excrescences, whether fleshy or vascular, gradually developed, and without having been provoked by the application of caustics—are so many reasons for exclusion from the service. It is not only the obstructed respiration, but also the fœtor of the breath and the nasal voice that prompt the decision in these cases."*

Loss of the nose, due to syphilitic or scrofulous cachexia, disqualifies the recruit not only as an indication of constitutional disease, but also on account of the modification of the voice consequent upon the lesion, frequently to a degree that renders the man unintelligible.

When the loss of the nose is congenital or due to accident, the same difficulty as to the voice presents itself; and the man, if enlisted, would be subjected to the impertinent jests of his comrades to his personal annoyance, and to the prejudice of good order in his corps.

* Aide Memoire.

Ozæna, when depending upon syphilitic, scorbutic, scrofulous, or cancerous cachexia, demands the rejection or discharge of the subject. *Not* so, however, if the consequence of recent disease, as coryza, for example, or scarlatina, or erysipelas. Copland mentions a case occurring from an injury of the nose received in hunting, and which was followed by erysipelas. In such cases, as it is not certain that the disease will not become chronic, the *recruit* should be rejected; but discharge should not be recommended until it is ascertained that caries of the bone has taken place, or that there is no reason to hope for a cure within a reasonable time.

Ozœna has been sometimes FEIGNED, or rather provoked, by the use of some irritating agent. The surgeon should be upon his guard against this imposture. The fœtor of the breath will be kept up in these cases by the use of a sponge saturated with old cheese or other fœtid material, and retained in the nostril by means of a thread passed through the posterior nares behind the velum palati. An attentive examination cannot fail to discover the fraud.

Ulceration may be produced and kept up by the repeated application of caustics. The fœtor of the discharge will probably be wanting in these cases; and this, with the absence of the usual constitutional accompaniments of the genuine chronic ulcers, affords the means of detection.

"Some young men have attempted to escape military service by imitating polypus of the nose, by means of chicken's testicles or rabbit's kidneys introduced into the nasal fossæ, and kept there by a sponge. But in these cases the natural conformation of the nose, which the 'schemers' cannot succeed in deforming, the natural condition of the mucous membrane, the nature and insensibility of the tumors, which it is easy to seize to draw out with forceps, or to cause to be ejected by sternutatories, soon discover the fraud."*

AFFECTIONS OF THE ORGANS OF MASTICATION, DEGLUTITION, AND THE VOICE.

Hare-lip, simple, compound, or complicated.
Loss of the whole or part of either lip.
Unsightly mutilation of the lips from wounds, burns, or disease.
Loss of the whole or part of either jaw-bone.

* Aide Memorie.

Deformities of either jaw-bone interfering with mastication, speech, or the tearing of the cartridge.

Anchylosis of the jaws.

Loss of the incisor and canine teeth of both jaws.

"To this catalogue we may add *caries*, or bad condition of a great many or most of the teeth. It is necessary that the soldier should be able to chew his biscuit. If he has lost some of the molar teeth, the others should be sound, as well as the gums that support them. Otherwise the jaws are exposed to frequent irritations; to swellings under the influence of the slightest causes. In the inspection of substitutes we should be very severe upon this point."*

To pronounce absolutely upon the number or description of the teeth that may be lost without disqualifying the recruit, would be a very difficult matter. All authors speak of this kind of defect, but always in rather indefinite terms. The British Regulations mention "loss of many teeth, or teeth generally unsound." Sir George Ballingall speaks of "extensive deficiency, particularly of the front teeth." The French, as above quoted, enumerate the loss of the whole of the canine and incisor teeth of both jaws.

The soldier requires a sufficient number of teeth in good condition to enable him to masticate his food properly. Hard bread, tough beef, and salt pork require good molars for this purpose. The incisor and canine teeth are not adapted to this end; *i. e.*, without the aid of some of the molars. The soldier must, again, have teeth of some description strong enough to tear his cartridge. This is usually done with the incisor and canine teeth; but if the bicuspid and two of the molars in both jaws upon the right side remain and are sound, we think this may be done as conveniently as with the incisor and canine. The instructions for tearing the cartridge in the infantry tactics merely prescribe that it is to be put between the teeth, without specifying the particular teeth by which it is to be torn.

If, then, the front teeth have been lost by accident, as sometimes happens, we should not reject the man on that account, provided the double teeth, or a sufficient number of them, remain sound in both jaws, and upon the right side. But if the front teeth have been lost from caries, and the double teeth are unsound to any extent, the man should be rejected. If the front teeth remain and the molars are gone, we think

* Aide Memoire.

rejection is again demanded, because the man is evidently incapable of properly masticating the food he must subsist upon in the field.

"*Fœtid breath*" is sometimes a reason for rejection. If merely a sign of temporary derangement of the digestive organs or the like, it is of no consequence; but if it depend upon extensive caries of the teeth, chronic ozœna, scorbutic, syphilitic, scrofulous, or mercurial cachexia, it demands rejection as well from its own offensiveness as from its being one of the indications of grave disqualifying disease.

Hypertrophy or atrophy of the tongue.

Obstinate or cancerous ulceration of the tongue.

Mutilation or the partial or total loss of the tongue.

Adhesion of the tongue to the parietes of the mouth.

Stammering or stuttering, if at all considerable.

Adhesions of the buccal membrane, the sequel of salivation, or other ulcerations of the mouth impeding the free motion of the jaws.

Stammering may depend upon habit contracted in childhood, upon malformation of the tongue, malposition of the teeth interfering with the free motion of the tongue, undue length of the frenum, etc. A slight degree of stammering would not be considered a reason for rejection, but if the defect were more considerable it would.

Of course there will be no difficulty in discovering the existence of this defect in the case of a recruit or a subsitute, but it may be *feigned* by drafted men, and, in that case, can be verified only by the testimony of those who have long known the man. Should there be no perceptible malformation of the larynx or tongue, or irregular disposition of the teeth, affidavits as to the fact should be required to justify exemption.

Congenital fissure of the bones of the palate;

Salivary fistulæ;

Chronic enlargement of the tonsils sufficient to impede deglutition, phonation, etc.;

Lloss of the voice, or a manifest alteration of it by a bucco-nasal fistula, by schirrhous tonsils, by the division or loss of uvula, by induration of the epiglottis, etc.;

Chronic laryngitis, aphonia; are so many valid reasons for rejection or discharge.

TRUE permanent APHONIA is a very rare disease. Temporary loss of voice is not uncommon. It is usually the effect of irritation of the laryngeo-tracheal mucous membrane, induced by catarrhal inflammation or tonsillitis; but it may be caused, and that suddenly, by injury

of the vocal organs or nerves. A division of the recurrent nerves will always produce it, and so paralysis of those nerves or tumors pressing upon them may cause it. The aphonia in these cases is permanent, or sufficiently so to call for the discharge of the man.

When permanent, then, except in cases of injury of the vocal organs, it is a difficult matter to verify; and cases have occurred where the malingerer has had sufficient control of himself to resist for a long time all the trials that could be devised for his detection. I had such a case some years ago. The man asked for his discharge. I could detect no lesion of any kind. Auscultation revealed no abnormal sound. There were no tumors in the course of the recurrent nerves. Discharge was refused, and the man placed upon duty that did not require the use of the voice. Finding his case hopeless, he deserted.

"In doubtful cases, after an attentive examination of the neck, the pharynx, etc., and a trial of sternutatories, nothing more remains than to try the effect of sudden impressions. An exclamation, or a word uttered under these circumstances, is sufficient to expose the imposture."*

Mutism is to be considered after the same manner. When congenital, it is always associated with deafness. It may, however, be accidental; but in these cases the injury that caused it may always be verified.

It is by no means certain that partial or total loss of the tongue will produce it. Certain sounds require the aid of the tongue for their articulation; others do not. However, as any considerable mutilation of the tongue would demand exclusion from the service, this is of no practical importance. But when the tongue is well formed—not atrophied or hypertrophied—when it can be protruded from the mouth without much difficulty and moved freely, if the mute is not also deaf, he is an impostor.

Affections of the Neck.

Goitre, if large enough to interfere with respiration, to prevent the wearing of a stock, or the hooking of the collar of the coat;

Osseous degeneration of the thyroid gland;

Engorgement of the lymphatic glands of the neck;

Scrofulous inflammation or ulceration of these glands;

The violet-colored, rugous, adherent cicatrices of these ulcerations; constitute so many causes of rejection.

* Aide Memoire.

In the examination of substitutes the surgeon should firmly reject any man thus affected, even to a very inconsiderable extent. Substitutes are almost invariably worthless in character, and ever ready to avail themselves of the slightest pretext to evade the duties they have assumed, not for patriotism, but for a price.

In the inspection of recruits, unless the tumors or cicatrices were more than two or three in number, combined with other indications of a scrofulous habit, we would not reject the man for *them*. For the other causes above enumerated, rejection is absolute.

Bègin says that these cicatrices and ulcers have been attempted to be imitated by means of caustics more or less active; but that the peculiar complexion of the subject, the state of the conjunctiva, the thickness of the lips, the soundness of the limbs, and the want of firmness of the flesh, are so many circumstances which, even supposing the appearance of the parts themselves should leave any doubts as to their character, would not permit the presence of scrofula to escape recognition, and the absence of which would leave no doubt as to the fraud.

Fistulous openings into the *larynx* or *trachea* are also causes for rejection or discharge.

Affections of the Chest.

Malformation of the chest sufficient to embarrass respiration, or in any wise to impede it;

Predisposition to phthisis;

Chronic pleurisy with existing effusion, or when effusion has existed and has been absorbed;

Caries of the ribs;

Phthisis pulmonalis;

Badly united fractures of the ribs, leaving a salient angle at the point of injury; are absolute causes of rejection.

In a former chapter we have given, at some length, the signs which indicate a healthy chest, or the reverse; but as the subject is of great importance, particularly as regards the acceptance of volunteers and the approval of substitutes, we cannot help quoting in this place the remarks of Bègin, which we find in the Aide Memoire. They point particularly to what may be considered *predisposition* to tubercular disease.

"Charged with two important and unceasingly active functions, the thoracic viscera constitute a double apparatus, the vigor and integrity

of which are so much the more essential to the soldier, as he is required to make more violent and more frequently repeated exertions. The *thorax* should be full and prominent, the ribs regularly and sweepingly arched, the shoulder blades well kept in and covered with muscles that completely fill their cavities. We should distrust subjects whose chests are thrust forward while the cartilages of the ribs are straight, instead of prolonging the graceful curvature of these bones. These chests, which are called 'chicken-breasts,' are seldom strong enough or roomy enough to permit the lungs to have free play in them. The same judgment should be formed of those marked and sometimes very considerable depressions of the lower part of the sternum and ensiform cartilage, the rather that the heart more than the lung has to suffer from this vice of conformation. Every one knows of how unfavorably portent, in relation to the integrity of the respiratory organs, are 'winged shoulder blades,' as they are called.

"Some physicians maintain this doctrine, that before pronouncing in favor of exemption, it is indispensable to fix with precision the kind of organic lesion of the lung or heart with which the individual is affected. So extreme a pretension is inadmissible; and in this connection we may remark in our clinics, surrounded with every means of investigation, and assisted by experience and profound science, how much difficulty the most skillful professors often experience in establishing the diagnosis of these lesions, and how many mistakes are revealed by their autopsic examinations. This is also a proper place to remark, that no important viscus can suffer for many years, or be the seat of grave lesions in its tissue, without the whole constitution partaking of its suffering, and presenting an alteration easy to recognize.

"When the chest is narrow and elongated, the countenance pale, or with merely a brilliant point upon the cheeks, the voice husky, articulation short, quick, interrupted almost every moment for want of breath, the skin presenting a fineness of texture, a whiteness or straw-colored tint, with abnormal dryness—when the limbs, more or less long, are thin, furnished with soft and emaciated muscles—these characters suffice to announce a weakly thoracic constitution, a manifest disposition to phthisis, and to demand exemption. When to these characters one endeavors to add the results furnished by auscultation or mensuration, we cannot but applaud this searching investigation.

"Dullness of a considerable portion of the chest, absence of the respiratory murmur, and its various modifications, the development or flat-

tening of one side of the thorax, will serve to confirm the judgment based upon first impressions, or to remove any doubt their insufficiency may have left in the mind. When there is, moreover, chronic catarrh, an old pneumonia, pleurisy with effusion, numerous and suppurating tubercles, the physician should undoubtedly push his investigations even to the appreciation of every particular of the pathological condition; but an exact knowledge of these is not of absolute necessity. It is sufficient to require exemption that the chest should be ill-formed, that its structure should appear to be too weak, and that the other parts of the organism should be stamped with signs of debility and suffering.

"In proceeding upon these extended views, it is true we run the risk of rejecting men who may afterwards become very robust, and who, by a long and successful life, may contradict the prognosis we may have pronounced in their cases. But look over the necrology of our hospitals, inquire of the inspectors general of our armies, attend the quarterly reviews of our military establishments, and you will be astonished at the number of men who, received because no determinate lesion of the thorax was recognized when they were inspected, succumb afterward with phthisis, or whom it was necessary to send back to their families with broken health after their strength had been exhausted. This is the plague of the army. I have already said that a feeble man left at home may become strong; but send him into the ranks, and he perishes almost certainly. Betwixt these two rocks neither the physician, the officer, nor the magistrate can hesitate an instant."

The practical good sense of these observations must command the assent of the intelligent medical officer. But we must go further and remark, that a decided predisposition to phthisis may exist without any striking defect in the development or conformation of the chest. Phthisis is a constitutional disease, and will frequently be shown by constitutional signs before any tubercles can be discovered in the lung, and, in all probability, before they exist in that organ. Before there is any cough or spitting of blood, or abnormal sound upon percussion or auscultation, emaciation begins, shown by absorption of the fatty deposits in the orbits, the cheeks, the limbs, &c.; then in the muscular tissue; loss of physical strength succeeds; the man is less active than usual—has a disinclination to work—and, finding his occupation irksome, for this very reason is induced to offer himself to enlist. He is not conscious of any local disease, and probably, as yet, has none;

but the vigilant surgeon will detect the phthisical aspect. When, therefore, evident emaciation exists, though but in an inconsiderable degree, unless it can be accounted for by antecedent and recent acute disease, the case is suspicious. The man will acknowledge an unusual sluggishness of feeling if questioned closely, and further inquiry will, in many cases, satisfy the examining surgeon that he will soon have tubercles, though no present sign of them can be detected, and though he may have a well-developed chest.

Hæmoptysis is always reason for *rejection*, but *not* always for discharge.

There are instances in which it may be considered accidental, but generally it is habitual, and then demands discharge as well as rejection. Sir James Clark has remarked, that it is occasionally idiopathic, or dependent upon a temporary plethora or congestion of the lungs, especially when it is a consequence of suppressed sanguineous discharges. It is sometimes a sign of disease of the heart, and usually of the left side, due probably, in this case, to some mechanical obstacle to the return of the blood from the lungs. It is sometimes a consequence of enlargement or congestion of the liver or spleen. It is sometimes a consequence, but not a cause, of tubercle in the lung. Pollock says it is a valuable indication of tubercle, but that it must be collated with the physical signs and other symptoms. He himself had a case of injury of the lung from fractured ribs, in which hœmoptysis occurred at short intervals for many months, but without any sign or symptom of tubercle.

When discharge is sought for on account of hœmoptysis, the case should be carefully investigated before granting or refusing a certificate. When it depends upon a cause that may be removed within a reasonable time, or a pathological condition that will not be aggravated by the duties of the soldier, the discharge should not be granted.

Hœmoptysis is sometimes FEIGNED. The man complains of weakness of stomach and spitting of blood. Sometimes mechanical means are resorted to to induce a discharge of blood from the several parts of the primæ viæ within reach. Sometimes stimulants to the salivary glands are used, and various coloring matters employed to redden the secretion thus induced. These, however, are clumsy contrivances, and readily detected. True hœmoptysis is thus concisely defined by Copland:

"After a sense of pain and heat in the chest, and titillation in the

throat, the rejection of florid, frothy, or pure blood from the bronchi or lungs, with a hawking or short cough."

When the blood is ejected in small quantities in the true disease, it is florid, frothy, and containing air bubbles, or mixed with muco puriform matter. Auscultation reveals a bubbling rale in the larger bronchiæ, or in the smaller branches, with absence of respiratory murmur.

Bègin remarks, that the true access always leaves after it a pallor and debility that artificial means never produce. The Aide Memoire observes: "It is easy to recognize the imposture by making them spit without coughing; for then the saliva will be colored red as well as if they had coughed. We should also make them rinse the mouth with water and vinegar, and see if the coloring matters of which we have spoken will not be found in this liquid."

"Furthermore, recent hœmoptysis, without signs of organic alteration of the pulmonary parenchyma, being no reason for exclusion from the military service, the most perfect imitation of this symptom is of no advantage to simulators in attaining their ends."

Structural or *serious functional diseases* of the *heart* constitute absolute cases of *rejection* or *discharge*.

From the experience of the writer, he is persuaded that too little attention is given to this important organ in the inspection of recruits. The surgeon should constantly bear in mind that the inducement to enlist is not unfrequently a sense of inability in the recruit to labor at his trade. In these cases the heart is as often the failing organ as any other. The hand should in all cases be placed firmly over the præcordial region, for the purpose of ascertaining whether there be any abnormal action of the heart; and if the least should be detected, the investigation should be pushed to certainty as to the existence of any disqualifying disorder.

The circumstance of being stripped and examined will frequently excite disturbed action of the heart, and there may exist palpitation from slight functional disorder that may be readily remedied. Such cases, of course, are of no consequence; but when structural disease or serious functional disturbance exists, the man is plainly unfit for service.

To facilitate the investigation of these cases, we shall here give a resumé of the principal points of diagnosis, chiefly condensed from Copland's articles on auscultation and diseases of the heart.

The physical means of investigation are palpitation, auscultation, and percussion.

The *impulse* of the heart varies in different individuals, and is modi-

fied by the *emotions*, by *repose*, or *exertion*. It is synchronous with the *first* sound of the heart. If a second impulse is felt with the second sound, it will be slighter than the first—deeper and more tremulous—and it is indicative of *hypertrophe* with *dilatation*. A *strong*, *heaving*, and *prolonged impulse* indicates thickening of the ventricular walls.

We have said that *emotion* may induce increased impulse; but when this impulse is *morbid*, it is *persistent*, and exists when the *number* of pulsations is not increased.

Diminished impulse, if marked, is sometimes an effect of depressing passions or diseases; but it is *generally* due to *thinning* of the *walls* of the *ventricles*, *congestion* of the *heart* or *lungs*, *asthma*, and the like.

In *health* the impulse is chiefly felt under the cartilages of the fourth, fifth, sixth, and seventh ribs. If felt beyond this, the existence of disease of the heart, lungs, liver, or spleen, effusions into the pleura or pericardium, or adhesions of these membranes, may be suspected, and should be inquired into.

Sometimes a deep-seated purring tremor will be felt when the hand is *firmly* pressed upon the præcordial region. *This*, when an *indication* of *disease*, will be accompanied with *abnormal sounds*.

The *sounds* of the heart also vary in different individuals. They are, if otherwise normal, *inversely* as the impulse. *Impulse* being in proportion to the *thickness* and *sound* to the *thinness* of the walls of the ventricles, they can never both be present in a marked degree in health.

The sounds of the left side are heard at the junction of the cartilages of the fourth, fifth, sixth, and seventh ribs with the sternum. The sounds of the right side, under the sternum and toward its right edge. The *sphere* of the *sounds* is more extensive than that of the *impulse*, particularly in narrow-chested and spare men. The sphere and loudness of the sounds are both increased by the affections above enumerated as increasing the impulse.

If exaltation of sound is accompanied by increased frequency of pulse, disease *may* not exist; but if an increased degree and range of sound be accompanied by a natural or slow pulse, disease may be inferred.

In *health* the sounds are strongest in the left anterior part of the chest; next in the sternal part; then the right anterior; then the left posterior; then the right posterior. If there be any alteration or deviation from this order, *disease* exists.

The *abnormal sounds* are the bellows, saw, rasp, and friction sounds. They must be considered, for our purposes, as always signs of disease;

for though sometimes produced by functional disturbance, they are generally the result of organic changes; and as in the examination of recruits time is not afforded for determining the fact, rejection must be pronounced when these morbid sounds are present. When the question is as to the discharge of a soldier, there is of course opportunity for thorough investigation.

The *friction* or *creaking* sound is always dependent upon structural change

Palpitations or other perturbations of the heart's action require careful investigation. They frequently depend upon excesses of various kinds that may be controlled and remedied. But tumultuous action of the heart is almost always indicative of organic disease. Long continued palpitation frequently produces in time undue prominence of the præcordial region, and is due to hypertrophy

Percussion —In *health*, the dullness over the heart is about two inches square in extent. If it exceed this at all, disease *probably* exists. If the excess be considerable, disease *certainly* exists.

A florid complexion, with increased action of the heart, pulsation of the jugular veins, irregularity of the pulse, blueness of the lips, a sallow cachectic hue of the skin, are so many important features of heart disease; and where they are present the examining surgeon should critically investigate the condition of this organ.

Affections of the heart are sometimes SIMULATED for the purpose of procuring a discharge. The excessive use of tobacco, tea, or coffee, and sometimes of garlic, may induce irregular and even tumultuous action of the heart. But if organic disease exist, some of the other signs afforded by percussion and auscultation will be present and decide the matter.

Asthma is a sufficient reason for rejection, whatever may be its character or degree; but when uncomplicated, there are no known means of detecting its existence during the intervals of the paroxysms. If of long duration, the lesions of the respiratory organs and heart it induces would reveal it, and of themselves, independently of the primary affection, would demand rejection.

Simple spasmodic asthma, without pulmonary or cardiac complication, is *not* a sufficient reason for discharge.

Affections of the Abdomen.

Chronic inflammation of the *gastro-intestinal mucous membrane*, with *marasmus*, *diarrhœa*, or *dysentery*;

Chronic hepatitis, or *splenitis*;

Engorgement of the *mesenteric glands*;

Chronic peritonitis, *with or without effusion*; are so many reasons for *rejection*.

When they are found to be incurable, or not likely to be cured within a reasonable time, they also justify discharge.

Men from districts in which malaria is rife, with systems thoroughly saturated with the poison of intermittent fever, are frequently driven to enlist from utter inability to go on with their work. Laborers upon canals and railways, upon newly opened farms, upon fresh-water rivers in the middle, western, and southern portions of the country, are often affected in this way, and in many cases it is a difficult matter to decide whether they should be received or not. If the wants of the service would admit of such men being assigned to duty in departments free from malaria, this difficulty would in a great measure cease; but as the recruit may be sent to a district equally malarious with that from which he has fled, it is obvious that, in this event, he will be likely to pass more time in the hospital than in the ranks.

If, therefore, the recruit present marked signs of malarial cachexia, with emaciation, sensible enlargement of the liver or spleen, with colorless lips, or the slightest tendency to œdema, he should certainly be rejected.

Certain symptoms dependent, when *real*, upon the class of diseases at the head of this section, are sometimes FEIGNED; such as *jaundice*, *vomiting*, *hæmatemesis*, *tympanitis*, &c.

Jaundice has been attempted to be simulated by coloring the skin with infusions of various roots, seeds, &c. Soap and water readily discover such silly frauds. The lack of color in the conjunctiva in these cases would of itself be sufficient to expose the trick.

"Carbo-azotic acid possesses the property peculiar to itself of giving a yellow color to the skin, as if the person were suffering from jaundice, when taken for three or four days. * * * * This coloration would be easily distinguished from jaundice by any medical man."*

*London Lancet.

"The salts of this acid crystallize very readily, and all explode when heated. When they are placed in contact with lime and green vitriol, blood-red solutions are formed."*

Moreover, jaundice, if real, would be of no consequence in this relation, except as a sign of chronic disease of the liver or duodenum: and, therefore, if discharge were demanded, it would be for the organic difficulty, and not for the jaundice.

Vomiting.—Some persons succeed in acquiring the power of ejecting the contents of the stomach at will, and have been known to avail themselves of this power to procure discharge or exemption from military service.

When this vomiting is pathological, *emaciation* and *cachexia* accompany it. The matters ejected by the malingerer generally consist of nothing more than the food recently swallowed, and that digested in proportion to the time that may have elapsed since the meal.

Hæmatemesis is simulated by swallowing blood and afterwards vomiting it in the presence of others. Bègin remarks, in relation to this: "Error will be avoided by observing, 1st, that blood recently exhaled into the stomach is ordinarily vomited in a fluid form, while that which has been swallowed is coagulated; 2d, that the fluid ejected in a morbid state is voided in variable quantities at a time, but continues for some length of time, and if it escapes in abundance, all the signs and results of internal hæmorrhage are speedily manifested; but in artificial bloody vomiting the whole mass is rejected without effort in a few gulps, and is quickly exhausted without the malingerer experiencing the slightest debility; 3d, in true chronic hæmatemesis the general health is impaired, contrasting strongly with the external signs of good health impostors always present."

Tympanitis has been successfully *simulated* by swallowing large quantities of air. Percy relates such a case. It must be very rarely that such a thing can be done. Injecting air per anum might be more readily practiced. These impostures present no difficulty in their detection. A chronic disease of the digestive organs, that could be productive of a sufficient degree of tympanitis to call for discharge or exemption from military service, would manifest itself by plainer signs than this.

Stricture of the rectum.

Prolapsus ani.

* Turner's Chemistry.

Artificial anus.
Fistula in ano.
Hæmorrhoids.

With regard to the four first of these infirmities, there can be no doubt as to their being positive disqualifications for the military service under all circumstances whatever. With regard to the last, the case is not so clear.

Hæmorrhoids are a very common affection. To exclude all men so affected, without regard to degree or extent, would be equally unjust to the recruit and to the service. We have no doubt that many able-bodied, effective men have been lost to the service by a blind adherence to the notion that hæmorrhoids always disqualify.

When hæmorrhoids are old, ulcerated, painful, or the source of frequent hæmorrhages, there can be no doubt; but when recent, appearing only occasionally, causing no discharge, or such only as may be readily relieved by ordinary means, they seem to us to be no objection to a recruit. Between these extremes there are many degrees, and these cases ought to be left entirely to the discretion and judgment of the inspecting surgeon. While a neglect to inquire into the existence of the disease would be culpable dereliction of duty on his part, the fact of his passing a man with piles, after a deliberate exercise of his best judgment, should not subject him to censure.

Hæmorrhoids are not enumerated in our Regulations among disqualifying causes, unless it be under the general expression, "*tumors.*" In the British Regulations they are enumerated, but with the qualification, "when they exist to such a degree as will immediately, or in all probability may, at no distant period, impair a man's efficiency." In the Aid Memoire they are mentioned only as one of the causes of eversion or falling of the rectum, and then as old and ulcerated. Still, we have seen cases where only two or three very small pedunculated hæmorrhoids have totally incapacitated an officer from riding on horseback, and sometimes from taking any exercise at all. In two of these cases we have removed the tumors with immediate and permanent relief. In other cases a considerable growth of these excrescences has produced little or no inconvenience. We have met with instances where the subjects were not aware they had anything of the sort until a military inspection has revealed them.

The disqualification caused by hæmorrhoids does not depend upon their development within moderate limits; and they ought not, in our

opinion, to exclude from service, except they exist to such a degree as to "impair the man's efficiency." How is this to be determined?

By inspection, it is plain that hæmorrhoids existing above the sphincter cannot be discovered, except they be ulcerated and furnish a constant purulent discharge, or while bleeding is going on from them. When they are *external* to the sphincter, they are of course seen, and the experienced surgeon will have little difficulty in judging whether they are old or recent. If recent, they can probably be readily cured without a surgical operation, and need not disqualify the man. If old, and not ulcerated, nor very extensive, the only means of ascertaining how far they "impair the man's efficiency," must be derived from the affirmation of the man himself. If he asserts positively that they do not interfere with his activity, he should not be rejected. Should the event prove that he practiced deception, he should not be discharged or excused from duty, but the tumor should at once be removed by operation.

Certificates of disability should never be granted for this affection if *external.*

Abdominal or crural hernia, single or double, reducible or irreducible, constitute absolute cases of rejection.

We think there is no other safe rule than to reject in all cases of hernia. Marshall is of opnion that the *umbilical* and *ventral* varieties are of little consequence; that they seldom incapacitate a man for duty. This is no doubt true, and the same may be said of an imperfectly developed *inguinal* hernia. Nevertheless, when a man is loaded with his arms, knapsack, &c., upon a march, or in action, grave inconveniences are very apt to occur, and even fatal results may be suddenly induced. As war is the "normal state" of the soldier, no recruit should be received who is not fully able to encounter all its hazards. "It is true that *all* soldiers affected with *hernia* do not incur the same disasters, and that many, in spite of their infirmities, make a number of campaigns without any sort of accident occurring: but if it is true that a single one has to dread them, is it not demonstrated that all those presenting this infirmity are physically unfit for all active military service?"*

The Aide Memoire deduces from these and similar observations, that *all* cases of hernia demand rejection, and most of them discharge; but that an *incipient inguinal hernia*, or an *ordinary hernia without complication*, and easily retained by a well-made truss, is not sufficient reason

*Memories of Military Medicine.

for the discharge of a soldier, particularly in the cavalry, where herniæ are generally very numerous.

In these opinions we concur. Men with ordinary hernia may be made useful in various ways, particularly during peace. They are fully competent to perform the duties of nurses in the hospitals, of cooks in the company's kitchens, of herdsmen upon the frontiers, &c.: and unless there be some complication, or some peculiar circumstance to justify it, a certificate for discharge should not be given in these cases.

In examining a recruit in relation to hernia, it is not sufficient to make the man cough while his hands are extended above his head, or even to place the hand *upon* the external ring while this is being done. The incipient or imperfectly developed hernia will frequently escape observation in this way. While the arms are extended above the head, the surgeon should carry a fold of the scrotum upon the point of the forefinger *into* the external ring, and as far up the inguinal canal as practicable, and then cause the man to cough. This is to be done upon both sides in succession.

Though crural hernia is a rare occurrence in men, still an examination of the crural ring should never be neglected.

A "*tendency to hernia*" is mentioned by some authors among the disqualifying affections of recruits. "Observe relaxed abdominal rings, as they indicate a tendency to hernia."—(*Henderson.*) "Hernia, or a *tendency* to that disability from preternatural enlargement of the abdominal ring."—(British Instructions.)

This language appears to us to be very loose and indefinite, and calculated to exclude numbers of effective men from the service in its application by the inexperienced surgeon, as well as to give rise to differences of opinion among the several medical officers who examine the recruit before he is finally enrolled.

Men who present themselves for enlistment are almost always such as have led laborious lives, and who, if a tendency to hernia is to be recognized from the size of the external ring, ought to have contracted that infirmity long before. They are not likely to be called upon to make any more violent exertion as soldiers than they have been making for years as laborers. It is possible that a relaxed external ring may predispose to the *direct* or *internal hernia;* but this form of hernia is comparatively infrequent. Cloquet found it to occur in but 86 cases, while he met with the *external* hernia in 203 cases. It is through the internal ring that the mass of inguinal herniæ we meet with protrudes.

An imperfect closure of the upper part of the inguinal canal undoubtedly predisposes to this form of hernia; but this is independent of the external ring. Hernia seldom occurs from this cause, except another be superadded in the form of violent exertion: and this not in the erect, but in a flexed position of the body—such as approximates the two rings, while the supporting power of the abdominal muscles is diminished, and the protruding power of these and their associate muscles is increased.

It may be merely accidental, but by far the greater number of herniæ that have fallen under our observation have occurred in comparatively robust, thick-set men—just the men who rarely have a relaxed external ring.

Bègin remarks, that "there are subjects not affected with hernia who have the *inguinal canal*, as well as the corresponding portion of the abdominal wall, weak and relaxed, forming above the fallopian ligament an oblong and elongated outlet from the pubis toward the anterior spine of the ilium—an outlet that increases under the influence of coughing or violent exertion, and appearing to constitute a sort of *rudimentary hernia*. When this condition is well marked, exemption should be conceded. When it exists even in a slight degree, the *substitute* that presents it should be rejected."

This is an intelligible "tendency to hernia," or. rather, it *is* a rudimentary hernia, and of course must be recognized as a valid objection to a recruit.

We conclude, then, that the term "tendency to hernia," as indicated by the character of the external ring, should be excluded from the catalogue of military disqualifications.

Hernia cannot well be *simulated*. It is, however, sometimes "*dissimulated*."

"To succeed in dissimulating a hernia, the tumor being inconsiderable, they reduce it, remain for some time in bed, apply over the dilated opening cold and astringents, and then present themselves for inspection—the tumor appearing neither spontaneously nor as the effect of a cough, which the dissemblers are careful shall not be very strong."*

This fraud will be detected by the mode of examination we have suggested above. In these cases the finger can be carried completely up to the internal ring, and then the nut-like protrusion will be felt if the man is made to cough strongly.

* Aide Memoire.

Affections of the Genital or Urinary Organs.

Epispadia or hypospadia at or beyond the middle of the penis;
Permanent stricture of the urethra;
Loss of the penis from any cause;
Permanent retraction of one or both testicles within the external ring;
Absence of both testicles from any cause; are valid objections to a recruit.

Stricture can be ascertained only from the confession of the man himself, or by instrumental exploration. To the latter there are serious objections. Many valuable recruits would be lost to the service, were this exploration insisted on, from natural unwillingness to submit to it. When a recruit acknowledges he has some obstruction to the free passage of his urine, catheterism should be resorted to, of course. We have frequently ascertained in this way that no permanent stricture existed, and have thus saved to the service men that, upon their own statement merely, must have been rejected. But when no such objection is acknowledged, we must rest satisfied with the declaration of the man.

Loss of both *testicles*, either from extirpation, atrophy, or natural defect, constitutes an absolute case of rejection.

The absence of both testicles from their natural situation does not necessarily imply the *loss* of them from either of these causes, for they may never have descended into the scrotum. In this case the usual signs of virility will resolve the doubt. Moreover, if the organs have been extirpated by accident or design, the cicatrix of the wound will reveal the fact. If they have disappeared from atrophy, some rudiment will still remain to show that they had descended.

When the testicles have never escaped from the pelvis, it is a matter of some importance to ascertain their situation. If they occupy any portion of the inguinal canal, they incapacitate the man from their liability to be followed by hernia, and particularly from their exposure to painful injury and to strangulation. This remark is also applicable to those cases in which only one testicle is present in the scrotum. The other may be interrupted in some part of the inguinal canal, and be followed by the consequences above noticed.

I have remarked in the cases of this kind that have fallen under my observation, the missing testicle has always been the *right*. I do not know whether this fact has been confirmed by the observation of others.

Some men have the faculty of retracting the testicle even within the external ring. These cases must not be confounded with those in which the organ has never passed that aperture.

We conclude, then, that complete castration, atrophy, or congenital deficiency of both testicles, or permanent retention of both testicles in the inguinal canal, demands the rejection of the recruit.

Sometimes we meet with an irregular semi-elastic mass appended to the inferior extremity of the testicle. It is frequently as large as the testes itself. It is insensible, and presents no pathological indications. These tumors have frequently been mistaken for *third testicles*. It is probable they are fibrous tumors attached to the tunica vaginalis, or encysted hydroceles. Mr. Curling mentions instances of both. The latter would be an objection to a recruit. It may be distinguished, like other hydroceles, by transmitting light through it in a darkened apartment.

It is possible, also, that this appendage to the testicle may be the thickened parietes of the tunica vaginalis, remaining after the cure of an old hydrocele or hernia.

Sarcocele, and even a *chronic engorgement* of the testicle that cannot be cured without extirpation of the organ, are absolute cases of exemption.—(Aide Memoire.)

In this dictum we concur. Even if the enlargement be not inconveniently great, it will be made a pretext for evading duties, if the man be enlisted.

It must be borne in mind, however, that these organs differ much in size in different individuals, and sometimes in the same individual. In the latter case the left is usually the larger. The average dimensions of the organ are:

Length, two inches.

Breadth, one inch.

Thickness, two-thirds of an inch.

Weight, (according to Meckel,) half an ounce.

Weight, (according to Sir Astley Cooper,) one ounce.

For the purposes of this work, *all* the different species of chronic swelling, to which the body of the testicle is subject, may be included under this head. Such of them as are specific or malignant in their character, as scirrhous or sarcomatous degeneration, or scrofulous or syphilitic swelling, are, of course, more objectionable than the simple enlargement.

Hydrocele, if sufficient in size to be at all readily observed, is also cause for rejection.

In both sarcocele (non-malignant) and hydrocele the question of *discharge* must be determined by the positive impediment they offer to the man's activity. In our service they will seldom be found of sufficient size to call for a certificate of disability.

Hydrocele has sometimes been attempted to be *imitated* by insufflation of the scrotum. There can be no difficulty in recognizing this fraud. Sometimes water has been injected into the cellular tissue of the scrotum. This might be confounded with anasarca of the sac, but it is to be remarked that this "affection never exists alone, and it is always accompanied by general organic characteristics, easily distinguished."—(Aide Memoire.)

Varicocele and cirsocele.

"Dilatation of the veins of the scrotum, (varicocele,) and that of the veins of the spermatic chord, (cirsocele,) when they have attained a size sufficient to impede progression, also constitute cases of exemption and discharge. These affections carry with them a constant sense of weight and painful dragging, that heat and fatigue augment."*

There exists among medical officers considerable difference of opinion as to the validity of these objections to a recruit. They are enumerated among the disqualifications in the British instructions under the same limitations as in the French. Out of 5,000 rejections in our service, 877 were for varicose veins and varicocele, (cirsocele?) Henderson says: "If not large, and if unconnected with a varicose diathesis—that is, varicose veins in the lower extremities—the recruit may be passed." He adds, that he never had a man report sick from this cause, and he quotes a remark of Marshall to the same effect. We can say the same thing, and by reference to the Army Vital Statistics, by Dr. Coolidge, it appears that in the whole Southern country, where these affections would naturally give most trouble, there were but sixty cases of all sorts of disease of the urinary and genital organs, exclusive of the venereal diseases and their consequences, in sixteen years. Some degree of cirsocele is very common, and if men are to be rejected for this affection indiscriminately, our rendezvous might almost as well be closed. We have known persons in civil life to submit to an operation for the cure of cirsocele; not, however, because it interfered with their activity in their ordinary pursuits, but from a notion that it interfered with the

* Aide Memoire.

special function of the testicle. A cirsocele must be quite large that can incapacitate a man for the performance of military duty. There should be some standard by which these cases should be judged, or one surgeon is constantly liable to have his judgment reversed by another, and to incur censure for carelessness in his inspections because a recruit is rejected at a regimental examination who had been approved at a rendezvous. We suggest, then, the following as a safe rule: If the testicle upon that side is atrophied, whatever may be the volume of the cirsocele, or if the volume of the latter exceed that of the former, the recruit should be rejected.

Occasionally a *very eligible recruit* presents himself with this affection. In such a case, if the man were willing to submit to an operation for the cure of the disease, we have received him and operated upon him at once. The operation of Vidal is so easily performed, so effective, and so rarely, if ever, followed by untoward consequences, that, with this method at our command, we should be very unwilling to lose a *decidedly* eligible recruit on account of a cirsocele. But, as a *general rule*, recruits with large cirsoceles are *not*, in other respects, decidedly eligible, and, therefore, within the limits above indicated, should be rejected.

Cirsocele is almost invariably confined to the left side. We have seen but one instance of it upon the right, and then it was double. The mechanical obstacles to the venous circulation upon the left side are the causes. The left spermatic vein entering the emulgent, and passing also under the sigmoid flexure of the colon, the course of the blood through it is obstructed by both circumstances, and hence the dilatation of the vessel. Sometimes the right spermatic vein also empties into the emulgent, and this may account for the rare instances of cirsocele upon that side.

Stone in the bladder demands both rejection and discharge.

It can only be detected by sounding; so, of course, the surgeon must rely upon the veracity of the recruit in examining on this point. A *very long prepuce* may suggest a more searching inquiry as to the existence of this disability.

Hæmaturia.—This affection being frequently a sign of grave disease, such as urinary calculus, organic disease of the kidney, bladder, or prostrate gland, scorbutus, etc., if known to exist, will require rejection; but the question of discharge will depend upon the fact of its being actually a sign of chronic disease in the individual presenting it.

An *accidental* hæmaturia, from the exhibition of certain remedies, from an injury that may be recovered from, etc., would not justify a discharge.

It is sometimes FEIGNED and sometimes SIMULATED by the presence of *bile, purpurine, uric acid*, etc., in the urine.

Malingerers sometimes inject blood into the bladder. In this case the fraud is detected by washing the bladder out well, and then confining the man under surveillance for a few hours. Upon drawing off the recently secreted urine, it will be free from blood. Should any other than human blood have been used by the malingerer, the microscope reveals the fraud at once.

Pariset's test for the detection of blood in the urine is to "boil the urine and filter it. Brown coagula of hæmatosin and albumen will be left on the filter: pour on these liquor potassæ, and if hæmatosin be present, a greenish solution will pass through, from which hydrochloric acid will precipitate white coagula of protein."

Purpurine "is distinguished by not being affected in color or transparency by a boiling heat."

Uric acid "is distinguished by not being affected by heat, and by the microscopic character of the deposit."

Bile, or its coloring ingredient, is thus detected:

1. "Pour on a white plate a small quantity of the urine or other fluid, so as to form an exceedingly thin layer, and carefully allow a drop or two of nitric acid to fall upon it; an immediate play of colors, in which green and pink predominate, will, if bile be present, appear around the spot where the acid fell."

2. "Add to a few drops of the suspected fluid, on a white plate, a little strong sulphuric acid; when the mixture becomes hot, add a drop of a saturated solution of sugar. The mixture will immediately assume a fine purple color if bile exist."—(Pettinkoffer.)

"Hæmatoxylon will often, by the red color it communicates to the urine, lead to an unfounded suspicion of the existence of hæmatosin—distinguished by the dark precipitate produced by sulphate of iron, and by an absence of coagulation by heat."*

Heat and Pariset's test will readily demonstrate the absence of hæmatosin, when the use of the pareira or chimaphila may have colored the urine.

The microscopic characters of the blood corpuscles afford the most

*Bird on Urine.

certain means of detecting the presence of blood when the instrument is at hand. "Whatever are the modifications presented by the blood corpuscles in urine, their non-granular surface, uniform size, and yellow color under the microscope, will always be sufficient to identify them."—(Bird.)

Urinary fistula is a positive disqualification.

Incontinence of urine is a positive disqualification.

This affection is seldom seen. I have met with but one instance. Percy and Laurent remark, that they had seen but two cases of *real* incontinence, though the number of *pretended* cases that had come before them was very considerable. It is as a FEIGNED disease that it becomes important to the medical officer.

Sometimes incontinence is due to mechanical lesion of the organs concerned, and then it is readily verified; but if due to pathological changes, in their nature obscure, the diagnosis is more difficult. Upon this point we shall translate literally the remarks of the Aide Memoire:

"Whatever may be the cause of this infirmity, it may be, 1, *complete*. Then the discharge of the urine is constant. It is made drop by drop. Then also the penis, particularly the glands, is pale, and, as it were, macerated. These parts are constantly bathed in the urine.

"It is said to be, 2, *incomplete*, when the excretion of this fluid is involuntary only at different times of the twenty-four hours. It is in the night, and during sleep, that this phenomonon most usually manifests itself. This condition is almost always accompanied with great wasting, pallor of the face, flaccidity of the limbs and of the genito-urinary organs; and, finally, all the characteristics of general debility. The bodies as well as the clothes of individuals affected with true incontinence emit a very strong ammoniacal odor.

"To recognize this disease, the orifice of the urethra should be dried with a piece of cloth, and if the affection is real, the urine will soon be seen to flow drop by drop. If the *reverse*, nothing will escape, and we shall easily perceive by the action of the abdominal muscles, by the suspension of the respiration, and by the urine expelled in jets, that the knave is trying to produce a little of this fluid. Simulation of this disease is again recognized by ascertaining, by means of the catheter, the presence of a considerable quantity of urine in the bladder. But it is important to take the precaution beforehand to make the pretended patient swallow in the evening a sufficient dose of opium to produce

narcotism, in order that the simulator may not discharge his urine voluntarily during the night."

Affections of the Vertebral Column.

Curvature of the cervical, dorsal, or lumbar portion of the vertebral column.

Gibbosity of the anterior and posterior parts of the chest.

Arching of the back, with flattening of the anterior part of the chest.

Gibbosity, or what is vulgarly called "*broken back*," is always a positive disqualification.

Curvatures of the spine and round shoulders, with flat chests, disqualify when they exist to such a degree as to impede respiration, or to interfere with the action of the heart.

Curvature of the spine is, moreover, an indication of scrofulous cachexia, and is significant in that respect. At the same time the muscles upon the interior aspect of the curve are impaired in force, and the physical vigor of the subject proportionately diminished.

The round-shouldered and flat-chested man will have the "vital capacity" of the lungs seriously diminished, and to an equal degree will be incapacitated for a march or the active exertion demanded in battle. He is, at the same time, no ornament to the ranks, and with the additional prominence given to his back by his knapsack, he renders it impossible for his covering file to preserve his alignment.

When, therefore, either of these affections exists to a degree that is recognized as a deformity, the recruit should be rejected.

Curvature of the *spine* may be *simulated* to escape a draft when militia are called for. These cases may always be recognized by the following characteristics:

1. The curvature is always in the lumbar portion of the column.
2. The skin lies in folds in the concavity of the curve.
3. There is but *one* curve in the spine.
4. There is neither gibbosity, torsion of the vertebræ, nor abnormal deviation of the bones of the pelvis.—(Guerin.)

In the antero-posterior curvature, Bégin suggests that "an excellent means of straightening the subject is to lay him on his back upon a horizontal solid plane, with the most convex part of the gibbosity resting on the table or the floor, the shoulder and head remaining more or less elevated. In this position the abdominal and mastoid muscles,

which are the principal agents in the simulation, soon become fatigued, and the subject finishes by extending himself completely."

Wry Neck.—"This is an affection in which the head, twisted to one side, cannot be brought back to its natural position. It is an absolute disqualification. It may be the effect of rheumatism, of wounds, of a fall, of inflammation of the subjacent cellular tissue, of convulsions. It may depend upon abnormal conformation, and it may also be very readily imitated.

"When the disease is *real*, the mastoid muscle of the opposite side is not usually in a state of tension, while it is always so when the case is simulated. Moreover, it is difficult for the impostor to turn his eyes toward the side opposed to the curvature, which is not the case in the true disease. In cases of fraud a few slight efforts are sufficient to bring the head to its natural position."*

Men frequently present themselves for inspection with shoulders of unequal height. This is generally the result of habit, and of no consequence, unless connected with true curvature of the spine. The degree of this curvature, where it exists, will determine the eligibility of the recruit. Whenever shoulders of unequal height are seen, attention should of course be directed to the spinal column.

Spina bifida;
Fractures and dislocations of the certebræ;
Rickets; are absolute causes of rejection.

Affections of the Extremities.

Disqualifying defects of the extremities relate to the articulations, to the bodies or shafts of the bones, or to the muscles and tendons concerned in the motions of the limbs.

It is a matter of primary importance that the soldier should have the perfect use of all his limbs, and that the completeness and integrity of these organs should be in nowise impaired. A careful inspection of the limbs, even to the most minute detail, will never be neglected by a surgeon who feels a proper interest in the good of the service, or in his own reputation. It is necessary not only to put the man through the prescribed motions, but also to *handle* every important joint, or the surgeon may be deceived. A fracture badly united may extend into a joint, produce no apparent deformity nor defective motion, and still in-

* Aide Memoire.

terfere essentially with the functions of the limb. Such a case has actually occurred to myself very recently.

With regard to some of the minor defects, as of the fingers and toes, for example, differences of opinion may exist; but still any deviation from the normal standard should be observed and carefully considered before it can be properly determined to constitute an objection to the fitness of the man for service. We are of opinion, moreover, that such defect should always be noted upon the descriptive list of the recruit, *if passed*, to show that it did not escape observation, though it may not have been considered of sufficient importance to exclude the man from service. Such a precaution would show that, however an examining surgeon may have erred in judgment, the passing of an objectionable recruit was not due to carelessness in the inspection.

Many of the lesions and deformities of the limbs that disqualify a recruit are *common* to both the upper and lower extremities. Others are *proper* to the one or to the other.

THE COMMON LESIONS are—

1. *Chronic rheumatism*, with swelling of the joints, or the neighboring tissues, earthy deposits, etc., causing any impediment to the performance of the normal motions.

Sometimes rheumatic pains are FEIGNED with a view of procuring a discharge; and Percy and Laurent mention an instance in which a soldier succeeded in obtaining his discharge for rheumatism and consequent contraction of the knee-joint after having undergone the infliction of blisters, moxa, and cups, and courses of mineral waters for four years. When he had attained his object, he put his wooden leg in the fire and boasted that he had successfully imposed upon every medical man who had had charge of him for all that time. Such a case could not occur in our service, for an eighth part of the time would have determined the question of discharge; but it shows that a determined man may succeed in deceiving the most experienced and learned surgeon.

In our service we think we would not grant a certificate for a rheumatism about which there could be any doubt. Mere pain, without swelling of the joint, though accompanied with contraction, would not be sufficient. Anæsthesia with chloroform would immediately resolve the question of contraction. There could be no objection to its use from heart complication; for if this complication existed, the reality of the rheumatism would be decided Neuralgia or syphilitic pains may

be verified by the coexistence of other signs, particularly those of defective hæmatosis and atrophy of the affected limb, where they shall have existed a sufficient length of time, for the question of discharge to be entertained at all.

2. *Chronic inflammation of the ligaments or lining membrane of the joints, the consequence of external injuries or constitutional disease, such as scrofula, rheumatism, gout, syphilis*, &c.

When there is even a slight degree of a soft, doughy-elastic, colorless swelling, especially if interspersed with blue veins about a joint, with wasting of the limb, chronic inflammation of the joint may be considered to exist. These appearances are more frequently seen about the knee and elbow joints, but sometimes also in others. Such men should always be rejected, no matter how perfect the apparent movement of the joints may be. They frequently seek the service for a hospital, and desert as soon as they are cured.

3. *White swellings of the joints.*

4. *Atrophy of a limb from any cause.*

5. *Caries, necrosis, spina ventosa.*

6. *Exostosis, occasioning any impediment to the motion of a limb.*

7. *Old or irreducible dislocations or false joints.*

The shoulder joint is especially liable to chronic dislocation. Some men have the faculty of dislocating it at will, and can in this way evade duty whenever they desire. Should an apparent relaxation of the joint lead to a suspicion that it may have been frequently dislocated, in addition to a searching inquiry as to the fact, the man should be made to swing by that arm from a hook or pole above his head.

8. *Important fractures.*

Whether fractures are, *per se*, disqualifying accidents, is an unsettled point. When they produce shortening of limbs, unsightly deformities, impediments to the free motions of joints, paralysis, atrophy of a limb, and the like, there can be no doubt; but when none of these accidents are present, is *every* fracture an objection to a recruit? We think not, unless from the concurrence of several fractures in the same individual, or the peculiar circumstances attending the occurrence of even a single fracture, there may be reason to infer a special constitutional liability to that lesion. Where a fracture has occurred, an inquiry should always be instituted into the cause of the injury. Sometimes fractures are followed by neuralgic pains, becoming aggravated at times, and thus disabling the man from work. If atrophy of the limb is present in

these cases, as frequently happens, the disqualification is at once recognized, and rejection is absolute. But if there be no atrophy of the limb, the surgeon must rely upon the man himself for information upon this point.

9. *Severe sprains, with or without complete displacement of the bones.*

Sprains properly treated seldom result in permanent injury. But in the class of men who usually offer themselves to the recruiting officer, such accidents, when they occur, are very frequently neglected, and leave chronic inflammation of the ligaments that is sure to induce lameness when the man is called upon to march or drill at light infantry. Hence, this injury should be borne in mind when inspecting the ankle joints, its most frequent seat. A similar injury to the wrist is of less consequence, but is not to be neglected. If any of the bones composing the joints are displaced, the man should be rejected, though he may give the strongest assurances that he suffers no inconvenience from the deformity.

10. *Dropsy of a joint.*

11. *Relaxation of the capsular or other ligaments of a joint, with abnormal mobility, or voluntary or involuntary dislocation of the bones.*

12. *Fistulæ penetrating into the joints or any part of the bones.*

13. *Defective or excessive curvature of the long bones.*

"*Bow legs,*" as they are termed, if within any reasonable limits, are no objection to a recruit, but are rather indicative of activity and strength. To the cavalry soldier they are a decided advantage; still, the curvature may be so excessive as to constitute a serious impediment to progression, and to point to a scrofulous habit for its cause.

14. *Complete or partial anchylosis of an important articulation.*

Injuries of the flexor muscles from gun-shot or other wounds, abscesses, &c., sometimes prevent complete extension of a limb without anchylosis. This result almost invariably follows a gun-shot wound, but is not necessarily nor usually permanent. Though a cause for the rejection of a recruit, it is not ordinarily sufficient reason for the discharge of a soldier. The simple operation of tenotomy remedies it at once, and is not usually attended with any danger.

We sometimes meet with *cartilaginous* or *bony* formations in the course of some of the tendons that may or may not interfere with the complete flexion or extension of a limb. I have recently reinspected a recruit with such a body in the tendon of the biceps flexor cubiti near the elbow joint. It obstructed complete extension of the arm, but did not impede

its flexion. I should have rejected this man had I inspected him before his enlistment; but having been enlisted, and, upon a careful inspection by a board, it being established that sufficient freedom of motion remained for the handling of *arms*, it was decided to retain him. We think, however, that there is great risk in receiving such men: for although, when enlisted, they may give every assurance that they have never suffered any inconvenience from this cause, and it may be found that the extent of motion in the neighboring joint is sufficient for all military purposes; still, so soon as duty becomes irksome, they seize upon the defect as a pretext for evading it.

Incomplete anchylosis is sometimes FEIGNED, with a view of procuring a discharge. Anæsthesia detects the imposture at once; but sometimes it may be inconvenient or injudicious to resort to this. In such cases the following remarks of Bégin will serve as a guide in forming the decision:

"Incomplete anchylosis is one of those affections that young men believe they can most readily simulate. When it is real we may almost always discover in the articulation, which is its seat, some traces of the inflammation or fracture that has occasioned it, and which is wanting when feigned. Invariably, in true anchylosis, the motions, free within the limits permitted by the lesion, cease suddenly at that point, as if a hard and inert obstacle there put an end to them, and without the intervention of muscular action of any sort. These motions, moreover, are not painful, and their extent never varies. When simulated, on the contrary, the subjects ordinarily complain of acute pain. When the joint they pretend to be diseased is put in motion, they stiffen the limb, the motion of which is arrested, sometimes sooner, sometimes later, in a gradual manner, and by the action of the muscles—a fact recognized by the swelling and hardening of these organs, as well as by the tension of the tendons. These signs leave scarcely any doubt of fraud."

15. *Weakness, difficult or total, and incurable loss of motion of a limb.*

16. *Paralysis of a limb.*

17. *Extensive, deep, and adherent cicatrices.*

It is only when these cicatrices impede the free motion of the limbs that they are absolute causes of rejection. As consequences of burns, and sometimes of ulcers, they are of this nature; but when seated on other parts, as, for example, the head or trunk, they are not *in themselves* objections to a recruit. As indications, however, of constitutional cachexia, such as the scrofulous or syphilitic, or as signs of habitual

intemperance, they are important, and in such cases will require rejection.

18. *Loss of a limb, or an essential part of a limb.*

19. *Deep depressions, inequalities, distortion or shortening of limbs, the consequences of simple or compound fractures badly united, violent sprains or luxations neglected or badly treated.*

20. *Contraction or permanent retraction of a limb, or a portion of a limb.*

21. *Aneurisms.*

Special Lesions of the Superior Extremities.

1. *Fractures of the clavicle.*

Fractures of the clavicle are rarely cured without deformity. Dr. Hamilton has carefully collated thirty-nine cases of fracture of this bone, and of these seven only have united without shortening; and in several of the latter there was still deformity, such as "fragments of bone displaced in direction of diameter of bone half an inch;" "a slight displacement forward," &c. Dr. Henderson quotes Marshall, to the effect that "men, whose clavicles have been once fractured, should almost invariably be rejected." But he dissents from the applicability of this dictum to our service, for the reason that our term of service is shorter. "Yet," he adds, "if the bone be badly united, or callus forms a tumor, it may be that the man is not able to bear his knapsack strapped, and should be rejected."

We have before remarked that, in our opinion, a man who is fit for a service of one campaign is fit for a life service. Muskets are to be handled, fatigue duties performed, and knapsacks strapped during the shortest term of service, and if a fractured clavicle disqualifies a man for the performance of these duties, he will be as sure to fail in five years as in fourteen.

Dr. Hamilton has shown that the badly united clavicle is the *rule*—the perfect, the *exception;* and such we apprehend will be the testimony of every candid surgeon who has not a hobby in some favorite apparatus for its treatment. We think, therefore, that Marshall's opinion is the true and only safe one, and confidently pronounce that a fractured clavicle, with a resultant shortening or displacement, is a positive objection to a recruit.

2. *Fractures of the coracoid or acromion processes.*

These fractures are rare. If they have occurred, and bony union has

taken place, leaving no deformity and no impediment to the free motions of the shoulder joint, they are no objections to a recruit.

3. *The fingers adherent or united.*

4. *Redundant, double, or split fingers.*

5. *Permanent flexion or extension of one or more fingers, as well as irremediable loss of motion of these parts.*

6. *Loss of the first phalanx of the thumb of the right hand.*

7. *Total loss of either thumb.*

8. *Total or partial loss of the index finger of the right hand*

9. *Loss of the first and second phalanges of the fingers of the right hand.*

10. *Total loss of any two fingers of the same hand.*

11. *Mutilation of the last phalanges of the fingers of either hand.*

"All these defects constitute absolute cases of exclusion from the military service."*

With one or two trifling exceptions we cannot hesitate to adopt these rules. We frequently meet with permanent partial flexion of the *little finger* of one or both hands, due to the effect of some particular varieties of labor. These flexions do not disqualify, as they in nowise interfere with the prompt and effective handling of arms. The permanent flexion of any other finger does, and should, exclude from service.

We have recently seen a man who had received an incised wound in the course of the flexor tendons of the forefinger. This man, when directed to flex his fingers, would do so without perceptible difficulty. Sometime after his enlistment he was observed upon drill to keep the forefinger *extended*. When asked the reason, he said he could not flex that finger without first extending the others, and then flexing all together. This appears to be anatomically impossible: but it serves to show how astute an indolent man is in availing himself of the slightest pretext to evade his duties when he is once enlisted.

Partial loss of the *index finger* of the right hand may be prudently considered as an absolute cause for *rejection*, but not for *discharge*. The instructed soldier will not find this defect any serious impediment in using his musket. The next finger soon learns to replace the first.

Redundant fingers are not always objections to a recruit. If the redundant finger is upon the ulnar border of the hand, it is not usually in the way, and particularly if it be the left hand. We think, unless this appendage were more developed than we have ever seen it, we should not regard it in the inspection of a recruit.

* Aide Memoire.

Special Lesions of the Inferior Extremities.

1. *Varicose veins.*

It is a very rare thing to find a young man with varicose veins to a degree sufficient to attract attention. Men of thirty, and thence on to the limit of eligibility, more frequently present them; but even in these cases they are usually a sign rather of intemperate habits, or feebleness of constitution, than the result of mechanical causes. Generally, they should direct attention to the investigation of the former, and if the result of this investigation be satisfactory, any *moderate* prominence of the veins need not be regarded.

But it must be borne in mind that the tendency of this affection is to become aggravated, particularly in tall men, and upon long marches with knapsacks and arms.

The character, then, of the veins should be well noted. Sometimes the minute superficial branches only are enlarged, and of themselves are of no consequence; but when clusters of knots are seen, or one or more single knots, large, and with thin walls, or a net-work of enlarged branches about the ankle, the back of the foot, the calf of the leg, the ham or thigh, the man should be rejected. In *all* cases of varix, when there is chronic tumefaction or œdema of the limbs or marks of ulceration, rejection is demanded.

2. *Chronic ulcers.*

"Ulcerated or extensively cicatrized legs" are enumerated among the cases of absolute rejection in the 32d paragraph of the Medical Regulations, and "ulcerated legs" in the 24th paragraph of Recruiting Regulations. The intention of these provisions is to exclude men who, from the cachexia induced by intemperance, syphilis, &c., have been the subjects of chronic ulcerations of the lower extremities. In these men the slightest irritation is sufficient to reproduce the ulcers, and they are, of course, utterly unfit for soldiers. We have in the preceding article alluded to cicatrices combined with varicose veins. To these we now add *cicatrices large, irregularly shaped*, with *discoloration* of the integument, or with *adhesion* to the *bones*. Cicatrices non-adherent, white and smooth, resulting from an incised or lacerated wound, or a burn, not involving lesion of the subjacent organs, are *not* causes for rejection. We may say, *generally*, that the ulcerations demanding rejection are those combined with great loss of substance; with atrophy

of the limb; with general constitutional disorder, or with varicose veins.

Ulcers of the limbs are frequently *excited* and kept up by malingerers to procure their discharge or to evade duty. It is not necessary to enumerate the means employed, nor, for reasons already stated, would it be prudent to do so. The means of *detecting* the *fraud* are of more importance. Chronic, inveterate ulcers, we believe, never occur unaccompanied by unmistakable signs of constitutional disorder. General cachexia and atrophy or tumefaction of the diseased limb are always combined with the local affections. In the *feigned* as well as in the genuine ulcer we may have discoloration of the surrounding integument; but in the cachectic ulcer this discoloration gradually blends itself with the healthy skin, while in the fraudulent ulcer its margin is defined and readily recognized. Percy and Laurent remark that, "if the patient has a good complexion, is not emaciated, has good teeth, no engorged glands in the neck, if the borders of the ulcer are round, brown-colored, the bottom of it hot and violet-colored, the surrounding tissues inflamed, with spots, blisters, or pustules upon them, fraud may be inferred; for men attacked with obstinate ulcers are cachectic, their skin dry and scurfy, and the affected limb is almost always atrophied."

The Aide Memoire concludes that "ulcers of the lower extremities are not sufficient reason for the exemption of a conscript, except they are accompanied with great loss of substance, where there is atrophy of the limb, where the general constitution is deeply altered, and where the ulcers are complicated with varices."

When fraud is suspected a number of means have been devised by military surgeons to prevent tampering with the ulcers during the treatment. The object of all of them is to render it impracticable for the man to irritate the sore without detection, or to make it impossible for him to touch it at all. If, in such a case, for the sake of example, severe measures should be considered necessary, perhaps the least painful, most accessible, and most efficient would be to confine the man in a straight-jacket, and to apply a splint to the ulcerated leg to prevent flexion of the knee joint.

3. *Lameness.*

Perceptible limping, to whatever cause it may be due, demands the rejection of a recruit.

It is sometimes exceedingly difficult and even impossible to ascertain the cause of the limping; and in the case of a recruit desirous of

enlisting, no assistance in this respect is to be expected from the man himself. It is not necessary, however, to be able to point out the particular lesion that causes the limping. If sufficient inequality of step, to be called a limp, exists, the man should be rejected.

Lameness is sometimes *feigned*. Bègin says: "The simulation most frequently employed to create a belief in its existence, is the shortening of one of the limbs, attributed to an old fracture, a dislocation, a fall, to convulsions, &c. The most certain means of recognizing the fraud, is to place the subject upon his back, and to measure both sides from the most salient point of the crest of the ilium to the external malleolus, passing the tape exactly in front of the great trochanter. Whatever may be the position of the pelvis, the distance between these points should not vary, and whenever this distance is equal in both limbs, the simulation will be manifest."

4. *Knock-knees.*

This deformity sometimes, though rarely, is carried to such an excess as to unfit a man for military service. In these cases it is impossible for the man to take the position of a soldier, and he is mechanically disabled from performing a long march. But it is not easy to fix a limit to this deformity as a cause for rejection. Much must be left to the discretion of each inspecting surgeon, and differences of opinion in such cases are to be expected. We would say, *generally*, that if a recruit cannot bring the inner borders of the feet, from the heel to the ball of the great toe, within *three inches* of each other, without passing the inner condyles of the thigh bones, respectively, in front of and behind each other, he is unfit for service.

5. *Club-feet* are always positive disqualifications.

6. *Splay-feet.*

Large, ill-shaped, flat feet, with scarcely a trace of the tarsal arch, may exist without disqualifying a man for the military service. It seems to be almost the normal foot of many of the Continental nations; i. e., among their laboring population. Some inconvenience is apt to be experienced among these men for a while after enlistment, from the abrasion of the inner malleolus, caused by the stiff shoe worn by soldiers. This, however, soon disappears, and the men are capable of becoming very good soldiers.

But there is a splay foot that disqualifies from marching, and demands rejection. It is thus graphically discribed in the Aide Memoire:

"The foot that renders a man unfit for service is that in which the

arch is so far effaced that the tuberosity of the scaphoid bone touches the ground, and the *line* of *station* runs along the whole internal border of this organ. Then the internal malleolous is salient, the astragalus is inclined inwards, and the axis of the leg does not fall upon the centre of the foot. From this disposition it results that the inner side of the tibio-tarsal articulation is prominent, that the corresponding lateral ligaments are elongated and weakened, and that, during long marches, with heavy burdens, this part, strained and wearied, becomes painful, and the man is obliged to fall behind. Carried to this point, this vicious conformation of the foot constitutes a case of exemption from the military service."

7. *All the toes joined together—the toes double or branching.*

8. *The great toe crossing the other toes with great prominence of the articulation of the metatarsal bone and first phalanx of the great toe.*

9. *Overriding or superposition of all the toes.*

10. *Loss of a great toe.*

11. *Loss of any two toes of the same foot.*

12. *Permanent retraction of the last phalanx of one of the toes, so that the free border of the nail bears upon the ground, or flexion at a right angle of the first phalanx of a toe* (usually the second toe) *upon the second, with anchylosis of this articulation.*

14. *Ingrowing* of the *nail* of the *great toe, usually* upon the inner side of the toe, if *deep* and *accompanied* with *signs* of *irritation, inflammation,* or *ulceration.*

These are all objections to a recruit, and are too frequently neglected. They invariably cause lameness upon a march, and frequently disqualify a man from undergoing the drills necessary for his instruction. When a man walks upon the nail, as it is termed, during a march, sand and other foreign bodies find their way between the nail and the skin, producing severe pain and irritation; and even if this is escaped, the constant pressure upon the free border of the nail is felt throughout its whole surface of adhesion, and develops there, and sometimes in the matrix of the nail, insupportable pain and inflammation. In the case of the anchylosed phalanges, the constant friction of the shoe upon a march soon obliges the man to give up and take to the wagons. Men with such infirmities are of no use whatever as soldiers.

15. *Stinking feet.*

It is very rare to meet with men whose natural secretions are so offensive as to be disgusting to their comrades. Offensive secretions

from the feet, due, as they are in most instances, to neglect of personal cleanliness, may be remedied. But sometimes a man is so unfortunate as to emit the most offensive odor from his feet in spite of every attention to personal neatness. Such men must be *rejected;* their presence in a barrack room would lead to the most injurious discontent.

CHAPTER III.

Affections of the Cerebro-spinal Nervous System.

1. *Epilepsy.*

Rejection is absolute in all cases of epilepsy.

It is impossible in many instances for the inspecting surgeon to detect the existence of this disease in the recruit. If the seizures occur at long intervals, or the disease is of recent development, it may, as yet, have left no impress upon the features of the subject by which it can be recognized. In these cases we are compelled to rely upon the honesty of the man himself. His answers, when questioned upon this point, should be recorded, that there may be no evasion of the fraud he may have perpetrated, by a denial that he was ever "asked the question," when he is detected.

But the recruit, when asked if he "has ever had fits," will sometimes say, "Yes; he had been told he had had one or more in childhood or youth," or he may have had *one* or, perhaps, *two* seizures at some particular period of his life, that may or may not have been true epilepsy; i. e., dependent upon alteration of the cerebro-spinal nervous centres. Still they are known, as is epilepsy, to the individual, under the general name of "*fits*." How are these cases to be dealt with?

If there be any reasonable doubt as to the true nature of these convulsions, so as to lead to the apprehension of the least probability of their recurrence, *rejection* is the only safe course. When such cases present themselves, if the man be of a strumous habit—if he be the subject of *syphilitic*, *mercurial*, or *scorbutic cachexia*—if he have received any injury of the head or spine, or have any disease of either—if his ancestors have been the subjects of epilepsy—if he be very plethoric or very anæmic—or if he have either functional or organic disease of any of the important viscera—or if his confessed convulsion have occurred within *five years'* time—he should be rejected.

In the habitually epileptic, however, the expression of the countenance, cicatrices upon the head from wounds received in falling, upon the tongue from wounds by the teeth during the paroxysm, wearing away of the teeth from grinding during the fit, etc., furnish important means of defeating an attempt at imposture.

Epilepsy is *feigned* sometimes to procure a discharge from service; and although it would seem that our means of detection were sure, still it must be admitted that the malingerer does occasionally succeed in his design. It is, then, a matter of great importance to fix, if possible, the signs by which *true* epilepsy may be distinguished from *feigned*.

"*Absolute loss* of *sensibility*, *dilatation*, and *immobility* of the *pupil*, are the characteristic signs of epilepsy."*

"In *true* epilepsy the eyes remain half open in such a manner as that the whites only are seen; the eyelids are at the same time agitated by winkings that art can scarcely imitate without exposing the iris, or the eyes are wide open and either fixed or turning in their orbits in a frightful manner."—(Marc.)

These phenomena with regard to the eyes are *generally* true, but not always. Sometimes the pupils are *natural*, sometimes *contracted*, but immobility or very sluggish mobility still obtains, so that the value of the sign resolves itself into the general anæsthetic condition. Bearing in mind, then, the varying condition of the pupil, but its fixity in that condition, this sign claims the first attention upon the part of the observer when fraud is suspected. If, then, upon exposure to a bright light of either the sun or a candle, normal contractility of the pupil is observed, the epilepsy is *feigned*.

Hennen's remark upon this point is more strictly correct than that of the Aide Memoire. He says: "But it is from the eye that we are best enabled to form our judgment. In the impostor it is movable, and the iris sensible to the impressions of light. In the real epilepsy the eye is fixed, and the iris does not contract on the application of light."

But the unfailing test of true epilepsy is the *absolute insensibility* of the surface that always exists. Devergie remarks that "the insensibility of the skin is so complete that the patient supports, without experiencing the slightest impression, the application of a red-hot iron to any part of the body. Thus this means has been recommended as a test in doubtful cases, selecting the insertion of the deltoid for the point of application."

Henderson has adduced two cases to invalidate the reliability of this test. But we think that something more is required than a mere assertion that a convulsion was *pronounced* epileptic to prove that it was actually so. There is no point in diagnosis upon which writers are more entirely agreed than upon this. Even in apoplexy, unless paralysis

* Aide Memoire.

have already supervened, the sensibility of the skin is preserved, as may be readily seen by tickling the feet; and so in the hysteric convulsion that more closely simulates the epileptic than any other, sensibility is only obscured—never lost entirely.

The command frequently attained by the impostor over all external manifestations of sensibility is so complete as sometimes to render necessary an application of the cautery to decide the question. Threats of a resort to this test, and even the approximation of the hot iron to the surface, have sometimes been resisted by a determined man. Such a case actually occurred at Fort Monroe some years ago under the observation of Assistant Surgeon Archer. The man confessed to the doctor, after his discharge, that he was upon the point of yielding when the iron was withdrawn. Of course no surgeon would use so painful an expedient until all other means of detecting a supposed impostor had failed.

Besides this fact of absolute insensibility, there are other signs of true epilepsy that it is not easy to feign. Such are the conditions of the circulation, of the countenance, of the respiration, etc. In true epilepsy, "the pulse is often quick and small, but it is felt with difficulty, and is usually irregular, becoming more distinct, slower, and more languid towards the close of this stage. The action of the heart is loud and vehement or tumultuous, and that of the carotids much increased."—(Copland.)

In true epilepsy, during the convulsive stage, the countenance is swollen, languid, sometimes almost black; the veins on the forehead full and prominent; and then, at the termination of the paroxysm, a sudden pallor pervades the whole surface. It would appear to be impossible to simulate both these phenomena.

But in *asthenic epilepsy* the countenance is not always turged or livid in the convulsive stage. This form of the disease, however, occurs in debilitated constitutions, in pale or sallow emaciated men, such as are not likely to be found in the ranks.

The respiration, upon the accession of a paroxysm of epilepsy, is interrupted by the closure of the larynx, according to Marshall Hall, so as to make the efforts at expiration violent and ineffectual, until sometimes a partial asphyxia is induced.

In epilepsy the fingers, thumbs, and toes are usually violently and permanently flexed, so that it requires considerable force to extend them; but the fists once open, they remain so, until a new exacerba-

tion supervenes to close them again. The simulator, on the contrary, will almost always close his fists again as soon as the extending force is withdrawn.

Henderson remarks, that "these voluntary efforts made by the simulator are so violent as to produce *perspiration*, which is not the case in epilepsy." This is erroneous. Toward the close of the convulsive stage of epilepsy, perspiration very commonly appears, and in the third or stage of exhaustion it is frequently profuse.

"The true epileptic is, to the attentive observer, a man altogether different from any other. It is rare to perceive in him an air of cheerfulness or vivacity. Nature, or rather disease, has impressed upon his features a character that appears to partake equally of sadness, of shame, of timidity, and of stupidity, particularly if the paroxysms are frequent, and if the physical alteration and impression they make upon the features and physiognomy have not time to become effaced in the intervals of the paroxysms."*

2. *Chorea;*

3. *Paralysis of any portion of the body;* are absolute disqualifications in a recruit.

Paralysis is sometimes FEIGNED.

A careful investigation of the case should generally lead to a satisfactory solution of the question of the reality of the affection, though we cannot agree with Coche that "the simulation of the disease is simply ridiculous."

Paralysis of one side of the body, (*hemiplegia,*) we think, cannot be counterfeited, because the pathological condition upon which it depends will give other unmistakable indications of its existence. But sometimes the paralysis complained of is confined to a single limb. In this case the indications are not so clear; but in adults this form of the disease very rarely occurs. I once saw a case in a child of eleven years of age in which the left arm was paralyzed as a consequence of hooping-cough. All remedies that could be devised by myself or others proved ineffectual; but I believe such an affection never occurs suddenly, or without an ascertaining cause adequate to the production of the lesion of the nerves or nervous centres upon which the paralysis must depend. The history of the case, then, and the progress of its accession, will determine the question. When the paralysis has existed for any length of time, emaciation of the affected limb will

* Die, de Science Med.

occur and assist in the solution of the doubt. Other means of detection have been resorted to in particular cases. Powerful electric shocks (a proper remedy in true disease) have proved too much for the stoicism of the malingerer. "Mr. Hutchinson detected an imposition of this kind in a sailor, by administering a dose of opium to the patient, and then tickling his ear during sleep. To relieve the irritation the paralyzed hand was instantly raised to the ear, which he rubbed with no small degree of force, and then turned upon his left side, dragging the bed-clothes over him with his heretofore useless arm."*

When one leg is the seat of the palsy, tickling the feet may excite movements of the limb, and yet the disease be real. These motions are automatic, and may be induced even when there is loss of sensation as well as motion, through the influence of reflex action. But I confess I should look with great suspicion upon such a case; because, if the paralysis depended upon spinal lesion, both limbs would proba bly be affected. If upon lesion of the nerves of the limb itself, reflex excitation would not be likely to be transmitted.

Paraplegia is another form of paralysis that is *feigned*, and, when recent, it is very difficult of detection. Men will bear cupping, blistering, and the repeated application of the moxa in these cases without flinching. This has occurred more than once under my own observation.

Paraplegia, unless from mechanical injury to the spine, and perhaps from cold, never comes on suddenly. Pressure upon the chord from effused blood, tumors, disease or displacement of the vertebræ, or effusion of serum within the spinal canal, inflammation of the investing membranes, or softening of the medulla, are its pathological conditions. It may be a consequence of cold, intemperance, or masturbation. It is to an accurate investigation of its history that the surgeon must resort for a sound judgment as to its reality.

A sudden invasion of paraplegia, as we have already said, can be accounted for only from the infliction of mechanical injury or from cold. Malingerers are always, or nearly always, attacked suddenly; but when the case is presented for decision, are there any signs by which its reality may be verified independent of its history? Motion of the paralyzed extremities may be induced in *real* cases from excitation of afferent nerves, provided the seat of the spinal lesion is sufficiently removed from the cauda equina to leave a healthy portion of

* Cyclop. Practical Med.

medulla sufficient to permit a transmission of impressions. This is, therefore, not reliable as a positive test, but may be of value as a negative one; for if automatic movements cannot be excited, the paraplegia is most probably real.

The most reliable sign of the reality of the paraplegia at a reasonably early period of its existence, will be found in the character of the urine. In the real disease this secretion will become ammoniacal, alkaline, turbid, and loaded with mucous. Watson emphatically and judicously says: "Do not forget the important fact that in many, nay, in most cases of paraplegia, the urine at length becomes ropy, alkaline, and stinking." So important an affection cannot exist long without exhibiting signs of constitutional disturbance and suffering that will materially aid in the decision, and, in the course of a month or so, atrophy or œdema will take place in the limb.

Imbecility and madness are absolute reasons for rejection or discharge.

It is impossible that acute mania should escape recognition in the examination of a recruit. But a sufficient degree of imbecility to demand rejection, or even some forms of monomania, may elude observation, unless the medical officer is careful to keep this fact before his mind during his inspection. The questions that should always be propounded to a recruit by the surgeon, as to his age, occupation, parentage, medical history, etc., combined with an attentive observation of the countenance, its characteristic expression, the shape of the head, and the like, will hardly fail to elicit some fact calculated to direct special attention to these forms of mental disqualification when they exist.

Maniacal affections are sometimes FEIGNED. Bègin remarks that, "among the characteristics of monomania and of true mania, there are *two* to which the attention of the physician should be principally directed. The first is, that aside from the subject of their delusion, monomanics, and most maniacs, are sufficiently rational, and answer questions justly proposed to them. The second consists in the almost absolute privation of sleep the true maniac generally experiences. Now, the simulator is very rarely capable of either limiting or extending sufficiently the field of his pretended madness, and his brain not undergoing in reality the excitement under which that of the true maniac labors, he is obliged, as others are, almost at his accustomed hour, to yield to the demands of sleep." Impostors are deficient in the presiding principle, the ruling delusion, the unfounded aversions and causeless

attachments which characterize insanity. They are unable to mimic the solemn dignity of characteristic madness, or to recur to those associations that mark this disorder; and they will want the peculiarity of look which so strongly impresses an experienced observer. The pretended monomaniac openly obtrudes his assumed delusion, and strives to make it square with other notions with which it has more or less relation. The *real* monomaniac, on the other hand, does not solicit attention, and takes no pains to reconcile his many contradictions. The open display and searching after effect of the one contrasts strongly with the reserve, the taciturnity, and the indifference of the other. The ungovernable fury which opposition and argument excite in most monomaniacs, is also a very striking character of the real affection."*

"The peculiar cast of countenance of the *imbecile* is extremely difficult to imitate. The dull, stupid, vacant, and wondering look, so characteristic of this state—the strange want of connection in the ideas—the submissive and pusillanimous behavior, with sudden and transient gusts of passion, are difficult to assume. In the less strongly marked forms of imbecility, shrewdness and stupidity are displayed, as it were, indifferently on all points; but, in an assumed case, the impostor is shrewd on all points involving his interests or the success of his scheme, and displays his stupidity only in matters of indifference. All his conversation tends to exculpate himself; that of the real imbecile, on the contrary, tends to criminate himself."†

In true mania, it will be generally found that, in addition to the persistent wakefulness before mentioned, the patient will be obstinately costive, sluggishly answering to the impressions of active medicines, even emetics and narcotics, indifferent to the sensations of cold or hunger, and, in acute cases, rapidly emaciating.

CACHECTIC DISEASES.

1. Scrofulous Diathesis.

Subjects of this form of cachexia cannot resist the influence of cold, humidity, defective nourishment, impure air, etc., in a sufficient degree to enable them to endure the usual vicissitudes of a soldier's life. When this constitution is well marked, the recruit should be rejected.

Sometimes a scrofulous child, upon arriving at puberty, has his constitution so modified as to become quite vigorous, and though, when

* Guy's Med. Jurispr. † Ibid.

full grown, he may present traces of early scrofulous disease, he cannot be considered as other than an able-bodied effective man. But when we find narrow chests, flabby muscles, a dull, lifeless complexion, languid circulation, with chronic tumefaction or ulceration of the lymphatic glands, sometimes like a string of beads around the neck in the submaxillary region, or in the course of the large vessels, the man should be set aside as unfit for service.

2. Scurvy.

It is seldom that this form of cachexia presents itself to the recruiting officer, but it may sometimes constitute a question of discharge. When, from accidental circumstances, the disease has progressed so far as to have induced organic alterations of important viscera, or of the bones, discharge would be proper and necessary. A mere swelling or bleeding of the gums, or the existence of maculæ upon the body or limbs, is not sufficient reason for either rejection or discharge.

3. Cancer.

"Cancer and, *a fortiori*, the cancerous cachexia, which is but the repetition of cancer in different parts of the body, totally disqualifies for the military service. To mention these facts is sufficient. They need no demonstration. Every one understands them, and perceives at once their bearing."*

4. Constitutional Syphilis.

Constitutional syphilis disqualifies for the military service, and no recruit presenting signs of the secondary or tertiary accidents of syphilis should be approved. However amenable to treatment many of these accidents may be considered to be, it must be recollected that they are very liable to reappear, particularly under the unfavorable hygienic influences to which the soldier is exposed.

But it is not always easy to determine whether several of the eruptions that are seen upon the bodies of men are syphilitic or not. Vidal remarks, that "the syphilitic eruptions present a physiognomy that cannot be mistaken, when the attention has once been fixed upon them This physiognomy consists in the color, form, chronicity, and marks which they leave behind." He says, "the color of these eruptions—

* Aide Memoire

the ham color of Fallopius, the copper color of Swediaur—has always arrested the attention of observers, and that it is still regarded as the most characteristic feature, that on which the differential diagnosis of these eruptions is based, that which distinguishes them from simple eruptions, or those of any other nature."*

Erasmus Wilson, however, says that "*reddish brown*" is the true color of these eruptions, and that the copper color is the sign of their declining stage. The copper-colored eruption will most frequently present itself to the inspecting surgeon for obvious reasons; but the color of the earlier stages of these "*syphilides*" should be borne in mind.

Cicatrices.—"The cicatrices left by syphilitic eruptions generally present the following characters: They are circular and more or less depressed. When *recent*, they have a brown color, and sometimes their tissue is slightly prominent. Beneath the epidermis we see the superficial vessels slightly broken. At a later period these become effaced, and a kind of internal absorption seems to be established. They lose their violet tints, become white and more depressed. Their surface, of a dull white color, is also tense or corrugated, shining or swollen, and sometimes furrowed with hard and prominent bands. Under certain circumstances they are white from the first, but of a bluish white. They are then surrounded by a coppery areola, which tends constantly to diminish, and the color of which is gradually lost in the surrounding skin."†

Cicatrices of buboes that have suppurated are no indication of constitutional syphilis. Taken alone, indeed, according to Ricord, they exclude the idea of constitutional taint. Whether this opinion be true or not, such cicatrices do not justify rejection.

The other syphilitic accidents that indicate important constitutional infection, are principally certain forms of alopecia, distinct from the senile, caries of the bones, ulceration of the mucous membrane of the nose, throat, and anus, mucous tubercles, exostosis, periostosis, the venereal testicle, and iritis. These are enumerated that the inspecting surgeon may keep them in mind while conducting his examination.

We do not consider the *primitive* accidents of syphilis as any insuperable objection to a recruit. Were the man otherwise decidedly eligible, we should not reject him on this account.

A simple recent gonorrhœa or balanitis is no objection to an otherwise good recruit: but repeated attacks of gonorrhœa, besides implying

* Blackman's Vidal. † Ibid.

a degraded moral sense, sometimes result in induration and contraction of the corpus spongiosum, rendering erections painful, and exposing the man to serious inconvenience from the irritation excited in marching, riding, &c. We have seen instances of this kind, and consider them as decided objections to the recruit.

5. Chronic and Incurable Diseases of the Skin.

We have already spoken of some of these affections as existing in particular regions, such as tinea capitis, &c. It would be impracticable in such a work as this to enumerate all the chronic cutaneous diseases that disqualify a recruit. We can only say, in general terms, that "chronic cutaneous diseases of a specific character, such as imply a constitutional taint, or such as are chiefly marked by chronic inflammation of the vessels secreting the cuticle, producing morbid growth of this structure, and generally dependent upon debility of the system,"* are insuperable objections to a recruit—such, for instance, as the various forms of lepra, elephantiasis, psoriasis, (palmaris, inveterata, and diffusa.)

Itch may be so inveterate as to demand not only rejection, but discharge. "When it has altered the constitution, and has assumed the aspect of an herpetic affection, as sometimes happens, it constitutes a case for exemption or discharge. Experience has in fact shown that it then resists with obstinacy the action of all therapeutic means."†

As a general rule a recruit, the subject of itch, should be rejected, that so disgusting a disease should not be propagated in barracks; but if circumstances should admit of the complete isolation of the man during the cure of the disease, and he is in other respects *decidedly* eligible, this rule may be departed from.

6. Feebleness of Constitution.

"It is impossible, in our opinion, to convey the idea we wish to express in any other language. There is *no* disease—to all appearance there is nothing more than defective development of organization. Nevertheless, several writers, and among them M. Coche, entertain a different opinion. They insist that a man should neither be exempted nor discharged for feebleness of constitution. One must, according to them, be able to recognize and point out some special disease. It is

* Plumbe, or Diseases of Skin. † Aide Memoire.

necessary, in short, that there be, in the case under consideration, some affection of one of the principal viscera enclosed in the splanchnic cavities. But it is evident that this mode of reasoning is quite erroneous. In fact, let any one examine the class of subjects of which we are speaking, and he will find in them every organ sound and without any lesion. There is simply *feeble development*, and the play of the functions responds to the weakness of the mechanism. Thus it is that the stomach can bear only a certain kind of nourishment; the pulsations of the heart are feeble; the lungs furnish but a slight animalized hæmatosis. These men partake more or less of the constitution of a woman, as well in the development of their organs as in the resultants of the functions. There is about them no particular disease or pathological condition; there is simply a less active vitality—a mode of existence not in harmony with their sex. But it is in vain to examine, to feel of them. We find sound organs, though but feebly developed—an *arrest* of development—a *feebleness* of *constitution*, which is a sufficient reason for their exclusion from the military service."*

We frequently see men whose constitutions may or may not have been originally feeble, but who, from unfavorable hygienic circumstances, have aggravated or acquired this *feebleness*, *debility*, or *general unfitness*. There is partial or general emaciation, mental sluggishness, a listless air, a torpor of all the faculties, absence of activity, indifference to all their surroundings. Too lazy or too feeble to work, they seek the service as an asylum only, without the least notion of ever performing their duties. Such men are cases for absolute rejection.

We have now concluded the subject proposed in this chapter, and it is believed every important defect ordinarily met with has been noticed, and its value as a disqualifying sign determined as accurately as the nature of the subject will admit. Of course other deviations from the normal standard than those to be found in these pages will sometimes be met with. The varieties of lesions to which the body is liable are too multiform to make a perfect catalogue of them a possible thing. But we believe that very few cases are likely to occur that will not find their analogues in the foregoing list, and that may not be fairly decided upon the principles therein enunciated. If, however, such

* Aide Memoire.

cases should present themselves, and the examining surgeon is of opinion that the defect may, by any possibility, under any circumstances, interfere with the perfect use of either faculty or limb, his duty will be to reject the man.

In addition to the cause of rejection we have pointed out, one remains to be mentioned, viz: *brands*, with *indelible* ink or *hot iron* on any part of the person.

Deserters and *drunkards* are frequently branded with the letter "D," or, in the case of the latter, with the letters "H D," in indelible ink, *usually* upon the left hip, *sometimes* elsewhere. In the British service the letter is sometimes placed upon the side of the *thorax*, under the arm. We have known deserters, in very aggravated cases, branded with the letter "D" with a hot iron upon the cheek. Wherever this brand may be found, or with whatever instrument it may have been affixed, *rejection* is absolute.

When men have been thus marked, they frequently resort to very ingenious devices to conceal it Elaborate designs, with various colored inks, to include the letter, are imprinted upon the person by some clever artist, and so well executed as effectually to hide the brand, unless they are very carefully scrutinized. It is, however, difficult, if not impossible, to obtain an ink of precisely the same shade as that used in the brand, and thus a minute inspection reveals the trick. Whenever, therefore, these designs are observed upon the person of a recruit, a careful examination should be made to ascertain if the letter "D" is not enclosed within them. It will be well, in cases of apparent branding, to try if the ink cannot be washed off. A man may sometimes mark himself in this way with common ink, between his inspection at a rendezvous and that at a depot or regiment, with a view to be rejected.

Mode of Examining a Recruit.

The room in which the examination is conducted should be well lighted, and large enough to admit of the men being walked about freely, that every organ concerned in locomotion may be subjected to inspection. For obvious reasons, none others than they whose presence is absolutely required should be admitted to the room.

The person of the recruit should be washed *clean* before he is presented to the surgeon for inspection. It is impossible for the medical officer to ascertain the existence of certain defects that *absolutely dis-*

qualify, when concealed, as they effectually may be, and sometimes are, by incrustations of filth a month old.

We have remarked that certain defects can be ascertained only by questioning the man himself; and that, in order to avoid all subsequent evasions, the answers to these questions should be recorded on the spot. We shall now suggest a method of effecting this object, as well as of making it sure that no important part shall escape inspection through any slip of the memory.

The following printed form is to be furnished, upon which the observations of the inspecting surgeon are to be recorded as they are made:

Recruit A. B.
Age —— years
Occupation ———.
Born in ——— ———.
Presented by ——— ———.

1. Have you ever been sick?
When and of what diseases?
2. Have you any disease now? (such as as diarrhœa, cough, and the like.)
3. Have you ever had fits?
4. Have you ever received an injury or wound upon the head?
5. Have you ever had a fracture, a dislocation, or a sprain?
6. Are you in the habit of drinking? Or have you ever had the "horrors?"
7. Are you subject to the piles?
8. Have you any difficulty in urinating?
9. Have you been vaccinated? or had the small-pox?

Head:
Ears:
Face:
Eyes and appendages:
Nose:
Organs of mastication and voice:
Neck:
Chest:
Abdomen:
Genital and urinary organs:

Vertebral column:
Superior extremities:
Inferior extremities:

REMARKS

(Approved or rejected, as the case may be.)
Date ——.
Rendezvous ——.

——— ———,
Inspecting Surgeon.

The questions should be asked and the man's answers recorded before he is stripped.

He is then to be divested of *all* his clothing, and the examination proceeded with systematically, in the order of regions, as indicated in the "Form."

The surgeon is to note every peculiarity or deviation from the normal standard in each particular region. For example: if the man has received at any time a blow upon the head with a resulting cicatrix or slight depression, let it be noted thus: "Cicatrix and slight depression upon the right parietal protuberance."

Scars upon any part of the person should be noted, and the cause assigned by the man recorded. It is not uncommon to find marks of free cupping upon the chests of Germans, without there being any indication of disease. These, however, should be noted.

If, upon inspection, the man be found to have a cirsocele, though not sufficient to disqualify, let it be noted under the proper head; and so of hæmorrhoids or any other affection. The vaccine scar and its position should be noted, and whether vaccination has been practiced at the rendezvous or depot.

Under the head of "Remarks," constitutional syphilis or other cachexiæ will find a place. If an interpreter is required during the inspection, that fact should be recorded. Men sometimes speak English very well when first examined, who, from after considerations, are entirely ignorant of the language when re-examined, and sometimes succeed in obtaining a discharge in this way.

By this means an accurate description of the whole person is obtained sufficient to settle questions of identity, should such be subsequently raised; and if there be any defects about which a difference of

opinion may exist, the fact that such defects were not overlooked by the first inspecting surgeon will be apparent.

It will frequently happen that an "absolute disqualification" will be discovered before completing the examination. Such a defect may be detected at any stage of the inspection. In such cases, it will of course be unnecessary to proceed any further.

The above Form when filled up, should be sent with the recruit to the depot, where he is to be finally inspected, and thence transmitted to the regiment to which he may be assigned.

Defects discovered at the depot upon reinspection should be indorsed upon the Form and signed by the surgeon. In case of rejection, the document thus completed should be transmitted, with the proceedings of the Board of Inspection, to the headquarters of the army.